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ANIMAL LIFE IN AFRICA

BY

MAJOR J. STEVENSON-HAMILTON

F.R.G.S., C.M.Z.S., LATE 6TH (INNISKILLING) DRAGOONS,
WARDEN TRANSVAAL GOVERNMENT GAME RESERVES

WITH A FOREWORD BY
THEODORE ROOSEVELT

ILLUSTRATED

LONDON:
WILLIAM HEINEMANN
MCMXII

27 June 1912.
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To

FIELD-MARSHAL H.R.H. ARTHUR W. P. A.,
DUKE OF CONNAUGHT AND OF STRATHEARN,
K.G., K.T., K.P., G.C.B., G.C.S.I., G.C.M.G., G.C.I.E., G.C.V.O.,
COLONEL-IN-CHIEF, SIXTH (INNISKILLING) DRAGOONS,

This Book

IS, BY HIS ROYAL HIGHNESS' PERMISSION,
MOST RESPECTFULLY DEDICATED.

FOREWORD

A BOOK about big game nowadays should be much more than a mere book about the slaughter of big game. The writer should be not only a mighty hunter, but a trained field naturalist, and therefore a skilled observer; and finally he should be a good writer, able to bring in vivid fashion before the eyes of others what he himself has seen.

Major Hamilton supplies all these requisites, and, moreover, he is a trained administrator, as a man must be who takes care of game reservations in satisfactory fashion.

I was first attracted to Major Hamilton by reading his delightfully-written accounts of some of his experiences on the game reserves of South Africa; I then met him at Nairobi, and a very brief conversation showed that he had the broad scientific knowledge—the knowledge of a good outdoor naturalist—and the power of observation which would render him able to write a book, eminently worth, not merely reading, but preserving for re-reading, on the library shelves that contain our favourite authors. No other man has possessed exactly the qualifications that Major Hamilton possesses to do the particular kind of work which he here essays; for he has treated his subject in an entirely novel manner. I count it as fortunate for all of us, whether our chief interest in hardy outdoor sports be drawn from love of hunting itself, from love of natural history, or from sheer love of the wild life of the open, to have such a book.

THEODORE ROOSEVELT.

LONDON,
June 1st, 1910.

PREFACE

Books dealing with the wild animals of Africa have become so numerous of late years, and have covered so wide a descriptive field, that there is some excuse for deeming the subject to be exhausted. The paths of personal adventure, and of sporting narrative, have been trodden by many writers ; but, with few exceptions, the latter have confined themselves to speaking of the observed habits of the beasts of chase. On the other hand, though scientists have accurately classified and described practically all the larger and a very great proportion of the smaller animals of the continent, they have, generally speaking, little to relate, from personal experience, of the ways of the creatures whose bodily structure they explain.

The sportsman or resident, new to wilder Africa, and interested in Natural History, often seeks in condensed form some account of the life economy of the animals which he finds around him, not only of those popularly known as "game," but of the less well-known types, the narration of whose habits is usually left to scientific writers.

The present book makes an attempt to meet these requirements, but its scope is necessarily limited, and it professes to do no more than point a way for some future and more complete work on the habits of African animals. It records such of the ways of the wild things as have from time to time been noticed by my staff (and myself) in the Transvaal Game Reserves and elsewhere, with here and there just sufficient description of a few less well-known types, to enable the novice to recognise them. Where fuller structural descriptions are given, I am indebted mainly to the valuable works of Mr. Sclater, Mr. Lyddeker ("The Fauna of South Africa," and the "Game Animals of Africa") and the British Museum publications. Several of my remarks regarding "station" are derived from the same sources. The animals treated of are chiefly those indigenous to South-East Africa, where my work has lain. My experiences in other parts of the continent are but those of the ordinary traveller and hunter, gleaned during expeditions undertaken before my present

appointment, and when leave of absence has afforded opportunity since. Such conclusions as I have drawn from them, therefore, are often those of incomplete observation. There are certain types of larger game, of which such writers as Mr. Selous have so fully described the habits that little more remains to be said regarding them. I have, where not otherwise stated, related only such apparent facts as have been noticed either by myself, or by those who, from their reliability and experience, might be trusted to state correctly what they had seen.

I have added a few chapters dealing with game protection, the gospel whereof calls for wide dissemination at the present day, and some notes on travelling and hunting, which may perhaps prove of some use to those who have had no previous African experience.

It remains to proffer what personal qualifications the author possesses as his excuse for undertaking to write about wild animals at all. A period of some years spent in travelling and hunting in the interior of Africa was followed, in 1902, by an appointment as Warden of the Transvaal Government Game Reserves, an area comprising some 14,000 square miles of bush country situated in the unhealthy country bordering on Portuguese East Africa. These nearly uninhabited wilds had become the last refuge for the big game of the Province, and contained a fair assortment of all the larger indigenous species preserved from destruction by the climate, the thick bush, and the former presence of tsetse fly. Nine years, spent, not in hunting, but in living among wild animals, studying their habits, and watching them gradually lose their intense fear of man, has been an experience which it has not fallen to the lot of everyone to share. There are few, I imagine, who would not find their bond of sympathy with the lower creation strengthened by such an environment, and to me the work has proved ever increasingly fascinating and instructive. I have had also the inestimable advantage of being assisted, not only in ordinary routine work, but in the compilation of my notes, by the careful and accurate observations of my white assistants, to all of whom, trusty companions and loyal friends that they have ever proved, I take this opportunity of tendering the expression of my deep gratitude.

To offer anything like a complete account of the habits of African wild creatures, even where the attempt is confined to a restricted area, is a task beyond the powers of any one man. The best of observers often contradict one another upon points of fact, and subsequent investigation may demonstrate that the disagreements were due, not

to want of accuracy on their part, but to the individual eccentricities of the wild creatures themselves. Experience teaches that however incredible some narrative may appear at first sight, it may really be a perfectly correct description of what took place, and therefore the wider knowledge a man has of wild beasts and their ways, the less prone is he to disbelieve anything he may hear concerning them. Man, even savage man, is utterly outside the economy of wild life. There exists among the beasts of the forest a sort of freemasonry, to which he, and to some extent his domestic animals also, are strangers. The observer little by little becomes conscious of this, and the longer he studies wild animals in their native haunts the more forcibly does he realise his ignorance of the motives which often control their individual and collective actions.

The success of game preservation in the Transvaal is primarily due to the strong and sympathetic attitude adopted by each successive administration, as well as to the work of the Land-owners' and Game Protection Associations, which have never ceased from combating reactionary tendencies whenever and wherever visible.

My sincere thanks are due to Colonel Roosevelt, not only for taking the trouble, at a time when he was exceptionally busy, to write the accompanying, and much too flattering, foreword, but because it was partly his kind appreciation of the few notes I had written which led me to expand them into the present volume.

Sabi Bridge,
April, 1911.

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CHAPTER I

THE GREAT GAME OF AFRICA

Origin—Specific Variation—Distribution and Migratory Tendencies—Colouration Theories—The larger Carnivora in relation to the Game—The Balance of Nature—Fear, natural and acquired.

AMONG the great divisions into which the zoological world has been separated by scientists, the Ethiopian region[1] is, at least within historical times, and with regard to highly specialised forms of larger mammals, the most lavishly endowed by nature, not only in respect of the numbers of individuals existing, but in the profusion of the genera and species which these individuals unite to compose.

Not only is Africa pre-eminently the home of that multitudinous and perplexing portion of the family of *bovidæ* popularly known as antelopes, but peculiarly her own are such strange old-world types as the hippopotamus and the giraffe, the latter, perhaps, the most strangely shaped creature on the whole surface of the earth, an animal, indeed, which, were its existence not testified to by the evidence of our own eyes, might well be deemed the fantastic creation of a Lewis Carroll. The several remarkably striped species of the *genus equus*, too, called zebras, are the possession of Africa alone, and present in their gradual variation from type a most interesting study.

Authorities are generally agreed that the remote ancestors of our modern Ethiopian mammals originally penetrated into the continent from the north-east, at a period when land and sea conditions perhaps differed very considerably from those now obtaining. Certainly the original invading families and genera would appear, after their arrival at their African goal, to have been, during many ages, sufficiently isolated to evolve, by slow and gradual change, into quite a bewildering series of species and of sub-species. It is a matter of common knowledge that the fauna now inhabiting the northern portion of the continent, roughly, that is to say, north of the Tropic of Cancer, is practically entirely Oriental and Holoarctic, which would seem

[1] Africa south of 23½° north latitude (Tropic of Cancer) is known zoologically as the Ethiopian region.

to indicate that some impediment occurred after the original influx, to prevent the further southern movement of later immigrants. At the present day, and probably for a long time before the opening of the historical era, no insurmountable natural obstacle to such progress exists, or has existed, though no doubt at a very early period the settlement of primitive man in the rich delta and along the banks of the Nile, to a great extent, opposed the southward immigration of a new fauna by this, the most obvious, route. The presence of wild sheep and goats, *ovis lervia* and *capra Nubiana*, in the hills bordering the Red Sea, and considerably south of the northern Tropic, would nevertheless tend to show that some such movement had commenced.

In contemplating the distribution of the various groups of wild animals in Africa, it is at once borne in upon the observer how different are the natural conditions governing their various lives, as well as how profoundly those conditions must have influenced not only their migrations, but also their specific changes. Those great pachyderms, the elephant and the rhinoceros, fearing no natural foe, crashing with consummate ease through the densest forest and brake, climbing over the steepest mountains, and often travelling immense distances in search of the food necessary to sustain their huge bulk, are found to differ merely specifically from their Asiatic cousins.

Very different is the case of the *bovidæ*. Among these we find genera and species utterly unknown outside the African continent, while within that continent itself they change their type gradually, and by infinitesimal degrees, as each diverging species, spreading into new areas, becomes more and more separated by distance and by natural obstacles from its earlier habitat. Perhaps among the antelopes some of the tragelaphines, notably the smaller bushbucks, present the most obvious example of very gradual transition of type. The brilliantly spotted and marked bushbuck of the Upper Nile, for instance, forms a most vivid contrast with his almost whole-coloured relative from the Cape Colony, and yet betwixt the two are found so many varieties, merging into one another by nearly imperceptible gradations, that it is often quite impossible to say exactly where one species ends and another begins. In a lesser, but obvious, degree, this is true of the elands, which, beginning with the magnificent and richly marked *taurotragus derbianus* from the western Sudan, become specifically distinct to the east of the Nile. Thence they gradually change in type through the brilliantly striped animals of the east coast and of south-central Africa, each variety differing

The White Rhinoceros

The Gazelles

The Oryxes

The Inyala

SOME GAPS IN
DISTRIBUTION OF SPECIES

slightly, but perceptibly, relatively to its position; until at length the dun-coloured and unstriped members of the group once so common in the Cape Colony are reached. Again, turning to the genus *damaliscus*, though there appears, no doubt, an immense outward difference between the Hunter's hartebeest of the north and the bontebuck of the extreme south, the most casual observer may trace the gradation of type from the tiang and the topi to the tsessebe of south-central and the blesbuck of south Africa, the latter varying but in some trifling superficial traits from the brilliantly-coloured bontebuck, now so nearly extinct. In all probability, were it not that, in the course of ages, the intermediate links in the chain of continuity have disappeared, it would be equally simple to trace, step by step, the connection between certain of the numerous forms of gazelles inhabiting north-east Africa and the springbuck of the south, now so widely divergent as to be classed as a different genus. Transition of type could, indeed, be followed probably in the case of all genera by an exercise of the imagination in filling in the blanks now existing from north to south, and from east to west, with extinct intermediate forms.

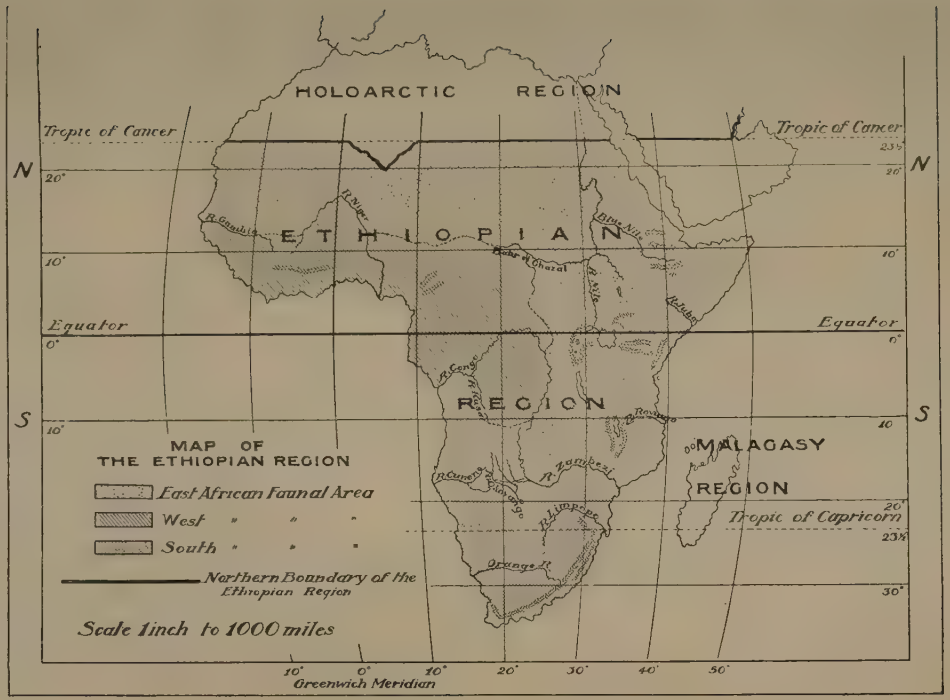
Science has not yet arrived at any definite conclusion as to what conditions have governed this continuous divergency from the original pattern in the case of some species of antelopes only, whilst others, notably the greater kudu, have been influenced but little by widely separated habitats. Probably environment and quality of food have had much to answer for in the matter. It is undeniable that horses imported to south Africa, when allowed to roam upon the farms in a semi-natural state, develop, within a very few generations, certain outward characteristics, the most striking whereof is a tendency to droop at the quarters, a tendency shared, I think, in greater or less degree, by many south African mammals, both wild and domesticated.

Though original divergence of all species from less specialised parent forms may be assumed, we are at present in ignorance as to why it is that such very wide gaps should exist on the map between the haunts of animals of the same or similar species, gaps often filled by creatures without even a generic connection with them. A striking example of this is afforded by the white rhinoceros. This great pachyderm was, until recently, supposed not to extend north of the Zambezi River, and it is only twelve years ago that an animal, differing so very slightly in physical conformation as to form no more than a local variety, was discovered by Major St. Hill

Gibbons to exist in considerable numbers on the west bank of the Nile, and a few degrees north of the Equator. Thus, there is a gap of nearly twenty degrees of latitude betwixt its northern and southern ranges, wherein no sign of this creature has been discovered, and yet it must, one would imagine, in past times have spread over the whole intermediate country wherever the latter suited its habits. Very remarkable too is the distribution of the oryxes, at one time numerous in south Africa, and still found in considerable numbers in the Kalahari, and as far north as Angola. Entirely absent from the fauna of south-central and west Africa, they reappear in the east and north-east, where they are represented by three types, two closely allied to each other, and the third showing very different characteristics. East and north of the Zambezi, again, there exists a huge area in which the giraffe is quite unrepresented, though no obvious reason can account for its absence.

No doubt distributional area has been profoundly affected by a variety of causes, whereof some are open to investigation, if not for definite solution. In the first place, so far as all wild animals are concerned, the primary consideration controlling their movements is that of food. Given plentiful sustenance, and no undue persecution from enemies, few wild creatures would have any ambition to stray any great distance from their place of birth. The calls of sex, and the consequent combats amongst the males, would not in themselves suffice to drive individuals far afield from the herds. The romantic picture of the wild creature bounding through its native forests, and exulting in its strength, though captivating, is scarcely true to life. Wild animals understand to the full the conservation of energy; except when very young, they never move for the mere sake of moving, and I am strongly of the opinion that, given exercise space adequate to maintain health, the woes of their captivity are largely fictitious.

A given area of land, however, may sustain only a limited number of the animals which feed upon it, and it presently comes about that, in response to natural increase, sections must break off from the main body to seek their livelihood at a distance. Droughts of unusual severity, or some climatic change, may be the cause of wholesale migrations. We see this factor at work down to the present day in the great springbuck treks in the north-west of the Cape Colony; and in the cycles of alternate drought and excessive rainfall, which may have affected at various periods divers parts of the continent, we can at once discern a determinating motive of many a great exodus


HOLOARCTIC REGION
Tropic of Cancer
Tropic of Cancer
N
N
20°
23½°
20°
10°
10°
ETHIOPIAN
R. Gambia
R. Niger
Blue Nile
Bahr el Ghazal
R. Nile
R. Juba
Equator
Equator
0°
0°
R. Congo
R. Kasai
REGION
R. Rovuma
S
S
10°
10
MALAGASY
REGION
R. Zambezi
R. Cunene
R. Kunango
R. Limpopo
Tropic of Capricorn
20°
23½°
Orange R.
30°
MAP OF
THE ETHIOPIAN REGION
East African Faunal Area
West " " "
South " " "
Northern Boundary of the Ethiopian Region
Scale 1 inch to 1000 miles
10°
0°
10°
20°
30°
40°
50°
Greenwich Meridian

in the past. Every year in a game country may be seen the migratory tendency at work upon a small scale. Thus, when a patch of country has been recently burnt, and the young grass shoots up fresh and green, it is astonishing to see how the animals for many miles around find it out and flock to the spot. Moreover, should it become indicated to their senses that still farther afield lie other tempting pastures, they will continue to move in that direction for very great distances: with the reservation that the homing instinct is, with the majority of animals, a strong one, and that therefore, sooner or later, there will be a more or less general backward movement. In a large game reserve, such as that of the Transvaal, it is easy to take note of the local migrations, and surprising to observe how very regular they are once the disturbing element of man's persecution has been eliminated. Thus, during the dry winter months, when herbage is scarce, and the water dried up, it is unusual to find the gregarious animals at a distance of more than a few miles from the main streams or permanent water. Most species feed down towards the drinking places as nightfall approaches, grazing slowly back again before dawn to rest during the heat of the day in the shadier parts of the forest. But from the very first shower, heralding the wet season, the actual banks of the main waterways will be found to be practically deserted, and during many months it will be vain to look in such places for aught but an occasional straggler from the herds. Even among the more strictly water-loving species the tendency is to seek the margins of the smaller streams, while flowing freely, rather than those of the larger. As the rain ceases, and the tributaries and pools again dry up, the animals retrace their steps, each herd finding its way with mathematical exactitude to its old grazing grounds. Experience too has shown that the less they are disturbed, the more do the animals hug, during the dry season, the immediate vicinity of the water, and the less extended become their nightly wanderings from its immediate neighbourhood.

The conditions which obtain at the present day, wherever animals are left unmolested by human beings, have, no doubt, controlled and governed their movements from time immemorial. In the course of the leisurely migrations in search of new feeding grounds, a mountain chain, a deep river, impassable morasses, even, in the case of some species, dense forests, would be sufficient to permanently divert the direction of the progress. Probably in the far-off days of the arrival in Africa of the ancestors of the present fauna, man, if he existed at all, was hardly an influence to be reckoned with;

but the other determining causes would be at work, just as they are now. Permanent or lengthy drought may have destroyed or driven away from given areas certain species, especially those to which grass is a necessity, and the country may never again have chanced to be occupied by their kind. Again, assuming that the life of a species proceeds on lines not very different from that of an individual, it may be supposed that where conditions became in some way relatively unfavourable, and comparative isolation existed, many types in the course of ages ceased to range over very large areas of country, thus leaving the large blanks in specific distribution which at the present day confront us. North and south of these gaps their generic relatives would, no doubt, continue to vary more and more in conformation and in colour, the one species from the other, as the years rolled on.

The attempt to explain the actual colouration of wild animals, however, leads on to very thin ice. Up to a short time ago, it was generally held that races of animals assumed, under natural selection, governed by the principle of the survival of the fittest, such colours and markings as best ensured their immunity from the attacks of enemies, having regard to their natural surroundings. This was and is, in theory, a very fascinating explanation, but Mr. Selous in his interesting "African Nature Notes"[1] has exposed the fundamental weakness of the conception by emphasising the fact that it is usually by night alone that the herbivora must dread the attacks of their natural foes, which moreover are accustomed to hunt by scent rather than by sight. Mr. Selous appears to favour the opinion that certain definite natural surroundings, more or less constant through many ages, may have exercised an influence upon colouring; in other words, he lends his support to the thesis of natural mimicry; and there need be nothing fantastic in this as an explanation. Yet I would not, in our present state of knowledge, discard in all cases the "protective colouration" theory. I remember being very struck with the appearance of a newly born lamb of, I think, a dama gazelle, in the Zoological Gardens at Khartum. This little creature, lying perfectly still, harmonised so perfectly with the reddish sand whereon it was lying, that it was possible almost to step upon without seeing it. I also upon one occasion, while on an open plain, saw through my glasses a gazelle ewe in the act of dropping a lamb. On walking to the spot, the mother having meantime decamped, I found

[1] Also see Appendix to Colonel Roosevelt's "African Game Trails," in which the theory is vigorously opposed.

the little creature very difficult to distinguish, though the grass was short, and I had never taken my eyes from the spot. It has been asserted that the females of herbivorous animals, about the time of parturition, lose their distinctive specific odour, and if this should be true alike as regards themselves and their newly born offspring, it gives some encouragement to the theory of colour as a safeguard in certain contingencies. Some authorities consider that what, for want of a better name, may be called accidental variation of type or colour, may originally have induced progress along definite lines of development, which would tend to persistence so long as sufficiently in harmony with the environment. When the environment becomes unsympathetic to the type, the latter must accommodate itself to the new conditions, either in form, or colour, or both, otherwise the species would gradually become extinct. Within certain limits there would of course still be space for considerable modification, due to the perpetuation of accidental hereditary tendencies, without any disturbance of specific well-being.

But when all is said, we are as men groping in the dark in such matters, and none of our opinions can at present lay claim to be more than pure speculation. Before leaving the subject, however, it may not be inapposite to point out that in the case of some families of ungulates, the nearer they are found to the Equator, the more distinctively and brightly marked are the individuals of various species. Generally speaking, following the rule prevalent throughout nature, the males are more richly coloured than are the members of the other sex.

The migrations of the larger carnivorous animals are naturally controlled by those of the creatures which form their prey. No doubt lions, leopards, and chitas, perhaps differing in no way from those existent at the present day—a hypothesis clearly supported by the close identity of the Ethiopian with the Oriental types—hung upon the flanks of the herds, as the ancestors of the present African ungulates gradually filtered over from Europe, or from Asia.

Nevertheless, conditions differing widely from those to which the latter, and in particular the antelope, groups are subject, dominate the existence of the beasts of prey, and the result of these dissimilarities is made manifest in the lack of specific change, notably among the greater cats, during their sojourn in Africa. A factor which strikes the observer as possibly influencing this adherence to type is that, while different species of herbivora consume often quite dissimilar descriptions of vegetable food, and what is favoured by

one is frequently avoided by another, carnivorous animals will eat any creature which they can overcome. Therefore the question as to the possible effect which changes in the quality of food may have imposed upon type perhaps has less significance in their case. The general conditions of life which these creatures have to face are nowhere greatly dissimilar. Nature of country, scarcity or the reverse of pasture, are to them matters of no account, except in so far as they may influence the movements of their natural prey. The circumstances under which they seek the latter in the Sudan do not differ materially from those whereto they must adapt themselves south of the Zambezi. Lions, chitas, and hunting dogs are accustomed to cover immense distances when hungry; indeed, it would scarcely be outside the mark to say that they will range on an average ten miles for each one traversed by the majority of the herbivora in the same period. For the rest, nature has, in the cat, evolved an animal apparently so absolutely suited, both physically and mentally, to its mode of life, that further improvement to meet conditions has perhaps appeared unnecessary. No one can look at the leopard, for example, without being convinced that it is one of the most perfect killing machines ever turned out of nature's workshop. In some of these motives we may perhaps discern at least a partial explanation of the tendency of all carnivora, and especially of the larger cats, to remain faithful to type, as opposed to the constant disposition to vary from it found in the case of many of the *bovidæ*.

In any game country where man has not yet unduly upset nature's balance, it will be found that the numbers of the carnivorous animals present are accurately and beautifully proportioned to the stock of those creatures which provide their food. This, at first sight, would appear remarkable, seeing that practically all the former produce several young at birth, whereas the latter are almost universally restricted to one alone. But if we look into the matter a little more closely, nature's methods will become clear to us. In the first place, the harmless beasts of the forest do not fall victims to the various endemic diseases which carry off domestic animals; while for all the epidemics, which from time to time have swept the former away, artificial introduction by means of the latter may be held responsible. Each female, from about her third year, produces annually, for probably at least seven or eight years, a single young one. Eliminating accident and depletion by natural enemies, it may be confidently asserted that, under favourable natural conditions, every one of these

young animals arrives at maturity, and if it happens to be a female, in due course reproduces its kind. Now, I am personally of opinion that the preponderance of females born over males is, in most species of antelopes, not less than six to five, and in certain of the more prolific, still more. It may, therefore, be realised that, given immunity from all foes, these animals would multiply at a prodigious rate—a little sum in arithmetic will suffice to demonstrate how fast.[1] But here nature steps in, and, as ever, disregarding the individual in favour of the race, provides two checks. The first of these is the food supply, deficiency whereof tends to kill off the weaker adults, while not only do the reproductive faculties of the residue become restricted through weakness, but the mothers are, in many cases, unable to supply an adequate amount of milk to such offspring as may be born to them, only the very strongest of which accordingly survive. The second check is that formed by the carnivora, which, in addition to the other toll they of course take, keep down the number of useless mouths by killing off practically all the weak and aged. Thus in each case the principle of the survival of the fittest is maintained.

Passing now to the contemplation of the rules governing the increase of the larger predatory beasts of the forest: nearly all the species of the order produce several young at a birth; but, so far as the observation of the most competent and reliable authorities has gone, it is exceptional for more than one or two of these to arrive at maturity. In infancy they are, in contradistinction from the antelopes, extremely weak and delicate, being, moreover, subject, right up to the age of puberty, to a number of infantile complaints and ailments which, without doubt, carry them off in large numbers. To what extent they do or do not survive to reproduce their species is, no doubt, regulated by the food supply available, firstly from their mothers, and later through their own efforts. Wherever, therefore, the rainfall is good, the herbage abundant, and the *bovidæ*, consequently, thrive and multiply, there we shall find a relative increase in the numbers of the predatory animals. It is obvious that, after being emancipated from his mother's care, the young carnivore must, in order that he may survive in the struggle for existence, be perfect in all physical and mental respects. The intensely acute senses of the animals which it is his aim to make his own, perfected by ages of ceaseless efforts to escape from natural enemies, ensure

[1] See table in Chapter III.

that it shall be, generally speaking, no easy matter for him to earn his daily bread, and in wild nature there is but one penalty for failure, and that is death.

Again, the rate of breeding of the larger carnivora in a wild state is, in spite of the short periods of gestation prevalent, probably slower than is generally believed; though, no doubt, this too may be dependent upon the food supply. Were it possible under ordinary conditions for these animals to increase over a certain area at a rate proportionately greater than that of the herbivora inhabiting the same zone, it must be obvious that, long ages ere man arrived upon the scene, they would, throughout the length and breadth of the continent, have entirely exterminated the weaker creatures, and been reduced to preying upon one another. But, so far from this having been the case, in all new and uninhabited game countries, we have unimpeachable evidence that the herbivora have been found to be exceedingly plentiful, and began to show signs of diminution, only after the entry of the human element. Mr. Selous pointed this out a good many years ago.

The balance, however, is so nicely adjusted, that to upset it forms no Herculean task. The life cycle of one of the larger antelopes, for example, being taken to be, in a wild state, approximately twenty years—no underestimation—then 5 per cent. of all the animals would, if left entirely to themselves, die annually of old age. Again, supposing that 20 per cent. is the natural gross annual increase in ordinary years, there would then, were the animals unmolested by enemies, be a net increase of 15 per cent. But it may be, I think, safely concluded that in any game country 15 per cent. of all the animals become food for the carnivora, a total, which, of course, includes the large number of young calves and lambs annually destroyed by vermin of all kinds, as well as the worn-out animals, few of which, it may be supposed, are ever allowed to die a natural death. From these latter classes, hyænas, beasts which cannot, except under very exceptional conditions, hope to secure as prey an able-bodied animal, no doubt, exact a considerable toll. Thus we are left with a margin of possibly 5 per cent. as the actual net increase under ordinarily favourable natural conditions, and this represents the interest which man may draw without encroaching upon the capital. Anything in excess of this means a permanent reduction of the stock, unless the carnivora are proportionately kept down at the same time. Within the Transvaal Game Reserves during the nine years of their existence, no shooting

of game has been allowed, while the carnivorous animals have been destroyed in large numbers: as a result, there has been a readily perceptible, and evenly graduated net annual increase of the protected animals; this has now reached, according to estimation, 10 per cent. annually of the stock within the reserves, taking an average of all species, and excluding the numerous immigrants from adjacent territories.

The stern mandate of nature, which in effect says, "Eat or ye shall die," imposes upon all those of her children to whom fate has assigned the wilderness as a dwelling-place, an unceasing struggle for existence, which finds its natural expression among the carnivora in preying upon the weaker animals, which, in their turn, take their toll of the vegetable creation. The epithets "savage, ferocious, blood-thirsty," often hurled by man, in his smug self-righteousness, at the beasts of prey, are scarcely deserved, least of all from man, for these creatures merely seek their natural food in obedience to nature's dictates, frequently, be it said, in fashions more humane than those adopted by their accuser.

The more wild nature is studied at first hand, the more is it impressed upon the observer, how little natural aggressive ferocity is found among the forest creatures. Such incentives as hunger, wounds, terror, surprise, and defence of young, may indeed for the time, and in individuals, change natural tendencies; but unrestrained though their natures may be by any principles of consideration for other living things—excepting only in the case of the regard shown by a mother for her young offspring—nevertheless, there is none of the wanton and senseless cruelty often practised by uncivilised man alike against the lower animals and his own kind.

Although the fact cannot be too strongly impressed upon the tyro, that no hard and fast rule can be laid down as governing the actions of individual wild animals, and therefore that no creature belonging to a species usually labelled dangerous, should be taken, as it were, on trust, there is still considerably less danger in traversing the African jungle by day than there is in crossing a thoroughfare in modern London. At night the situation alters, the beasts of prey are then abroad seeking their food, but even so, they will, I think, unless under exceptional circumstances, or when driven by extreme hunger, endeavour to avoid man. When full-fed and not terrified, injured, or otherwise imposed upon, a carnivorous animal can hardly be considered more dangerous than any other wild beast: moreover, the fact that he is not to be dreaded when his hunger has been

satisfied, seems to be tolerably well understood by the wild animals which form his prey, as many instances of personal observation have testified. As regards man, fear on the part of wild beasts is, I think, not seldom apt to be mistaken for aggressiveness. The lion or leopard, wounded, or driven into a corner, whence escape seems impossible, become extremely dangerous creatures to approach. The rhinoceros, startled suddenly from his midday siesta, rushes blindly at the intruder, an action perhaps, in his opinion, affording the safest method of overcoming the danger which he believes threatens him. The elephant charges at times unprovoked, possibly less because he is naturally aggressive, or vicious, than that his intelligence and experience have taught him to hate and dread man, and he hopes by promptly taking the initiative, to destroy or drive him away. The buffalo perhaps never deliberately attacks unless he has been wounded or otherwise injured more or less recently, and still feels the smart of his hurts. Most creatures, indeed, when they feel themselves to be in desperate straits, or in defence of their young, will endeavour to make some demonstration against their enemies. Close quarters with wounded roan, sable, or wildebeests are wisely shunned. Even the little duiker has been known to inflict a nasty wound. The gallantry of the bushbuck at bay is proverbial. But, taking the wild creatures all through, we find little of what can be truly called wanton aggressiveness, either with respect to each other or towards man. Indeed, as regards the latter, fear seems always the predominating feature, wherever his heavy hand has been felt.

Nothing, in parts of south Africa which have been excessively shot over during many years, impresses itself more vividly upon the observer than the blind, almost abject terror, which the animals show at the smallest indication of man's presence. It dwarfs to nothing, among the ungulates, such fear as their natural foes are capable of inspiring. And yet this alarm is purely of an artificial nature. Experience would tend to indicate that there is no such thing as a natural or telepathic fear of man, as man, prevalent amongst any wild animals. Indeed, wherever there has been in the past considerable immunity, a great amount of persecution extending over a fairly long time would appear necessary to instil terror. The game on the plains of east Africa is comparatively confiding even down to the present day. Suspicion of strange objects is strongly impressed by training, and perhaps by heredity, upon all wild, and, in a lesser degree, upon all domestic beasts, and as, within its own

experience, the strange being has acted at the first encounters, so will the individual animal tend ultimately to regard it as harmless or the reverse. We all know how a horse is given to shy away from some new and unaccustomed object, which, once discovered to be innocuous, he afterwards agrees to regard with equanimity. A dog or cat may, in less degree, be startled by some sudden unexpected appearance or movement. In each case it is the legacy of instinctive self-preservation handed down through a long line of ancestors. The little antelope or zebra may be taught by its mother from early infancy to fear a human being equally with a snake or a four-legged foe, but, if deprived soon after birth of her guidance, its natural suspicions are much less definite in character. Whence it would seem that while mistrust is inherent, the fear of definite objects has to be instilled artificially by precept or by experience. I have never observed that horses brought from a civilised and settled country show any special fear of, or antipathy to lions as such, or regard their carcases with any special nervousness, though in the presence of one which is in any way demonstrative, they are naturally alarmed; but should they have ever experienced an adventure or narrow escape, especially if slightly clawed, they become so nervous as practically to be useless for bush work for ever after. The same is to some extent true of dogs. The town importation will, in most cases, merely sniff curiously at the dead carnivore, which the native-bred animal from the village will go a long way round to avoid. The tame elands, kept at our headquarters for the past few years, display the most absolute apathy in the presence of the captive carnivora, which at times pass through the station. I have frequently tested them by allowing them to smell the skins of newly-killed lions and leopards, which appeared to cause in them no feeling of alarm, and on one occasion, when a couple of young chitas escaped and took refuge in the elands' stable, beyond the fact that the bull smelt at them with some appearance of curiosity, their presence seemed to pass unnoticed.

Certainly the result of a few years' immunity from man's persecution is quite remarkable. Even the older animals, whose recollections of former customs must be sufficiently vivid, appear, after a time, to lose the feeling of active alarm which they were accustomed to exhibit in human presence. As for the young wildebeest, sable, and zebra, they will frequently not only follow the mounted ranger, but will come galloping alongside the track, wheeling and dashing

off across his front, to stand staring until he is past, and then come up again with a rush from behind. The full grown impala females, and the young males, which are sometimes netted for transference to zoological gardens and farms, become, with due attention, quite tame within a few weeks of capture, and can then be boxed and despatched by rail with but little more trouble than would be given by the same number of domestic animals. Wild creatures discriminate between friends and foes nearly as quickly as tame ones, and it seems not impossible that after the old generation, which remembers the hunter and his rifle, has died out, there may be room, in a game reserve, for some remarkable experiments bearing on the confidence of the new one, in creatures which they have found by experience have no desire to harm them.

CHAPTER II

THE DESTRUCTION OF GREAT GAME

Effects of the advent of (1) Savage, (2) Civilised Man upon the Nature and Distribution of the larger Mammals—South African Methods in the Past—Present day Conditions throughout Africa—Factors in Game Destruction.

We may now consider the effects of man's advent upon the great game in general. At first, primitive man, moving about in small family parties, armed with the rudest of stone weapons, and maintaining himself with difficulty amid hostile environment, was of little account in influencing the swarming millions of the contemporary fauna. This state of things no doubt endured undisturbed through countless ages, indigenous man all the while slowly improving his weapons and perfecting his hunting craft. Then a time arrived when the primitive bushman was, over great areas, supplanted by more advanced races, united under tribal systems, and in possession of flocks and herds. The effect on the status of the wild animals must, as time went on, have become more and more apparent: the goats, sheep, or cattle, wherever numerous, would, no doubt, eat up the pasture, while the savages, with their organised hunts, their snares, and their pitfalls, would be active in the pursuit of the game. Continuity of species must have received a shock, as the settled habitats of the animals were disturbed by human agency, direct or indirect. Nevertheless, the rude means of destruction employed were still insufficient greatly to reduce the numbers of the herds; whilst intertribal warfare, by keeping down population, and rendering it always unsafe for any but large parties to venture far from home, was an active agent towards preservation. The natural indolence of the African, too, which causes him to prefer the ease of the village to the hardships of the field, and urges him to hunt only when necessity impels, must have been, then as now, a potent factor in favour of the game. Indeed, it seems probable that when the European first came upon the scene, the fauna generally had decreased little during many thousands of years.

The advent of the white man marked the initiation of a new, and very different, era. The gradual extirpation of the great game of

Africa dates from the moment the Dutch Colonists first settled at the Cape in 1652. Thenceforth, it slowly disappeared from its more southerly haunts, either through extermination by, or flight before, the ever busy musket of the settler. The process was at first, we know, a slow one; but, early in the last century, the animals had been driven out of the more fertile districts of Cape Colony, and hunters in search of the larger species had to cross to the north of the Orange River.

The second act in the drama opens with the great Boer Trek northwards in 1836. During its continuance, and for many years afterwards, the emigrant farmers fed themselves, their families, and their dependents, almost entirely upon the flesh of the game which they shot. As the years passed, the process of destruction progressed with increasing rapidity: not only did the quality of firearms continually improve and ammunition become increasingly plentiful, but more settlers and hunters continued to arrive in south Africa. Most fatal blow of all, hides and horns acquired a definite value in the markets of the coast towns and of Europe, and so put a certain premium on game destruction. Doubtless, during this period, game seemed so numerous that its extermination did not appear the least likely, seeing that the teeming countries to the north continued to unfold fresh hunters' paradises to the foremost pioneers. Nevertheless, irreparable harm had taken place, even before the introduction of the breech-loader, in the complete extinction of more than one species, and the reduction almost to vanishing point of others. The herds, too, were driven from their former haunts, the natural distribution of species, even outside the regularly settled districts, was profoundly disturbed, not only by the continual war waged against the whole animal creation by man, but also by the encroachment, in ever-increasing numbers, of the settlers' flocks and herds upon their pasturage. With the introduction of breech-loading rifles, the process of extirpation rapidly reached its climax, except in the more unhealthy and inaccessible districts of south Africa. Many species undoubtedly to a great extent changed their environment and general mode of life. Plain living animals tended to become forest dwellers, while others, formerly found in the open by day, ventured to seek their feeding ground under cover of darkness only. Individual disposition, too, markedly altered; mere suspicion and placid curiosity, in the more systematically hunted districts, gave way to the most profound terror at sight or smell of man. The poor remnant of what was once the most glorious fauna of modern times became mere persecuted

fugitives, ever living in a state of restless and pitiable agitation. At the present day there exist but few places in south Africa where it is possible to study wild animals as they would really conduct themselves, had they or their more immediate ancestors been less unmercifully harried and harassed.

As if the bad days on which the game had fallen were not enough, during the 90's of the last century, the epidemic known as rinderpest swept through eastern Africa nearly from north to south. Originating, it is believed, in Italian Somaliland, from the importation of Asiatic cattle, among which the disease was endemic, this frightful pest, in the course of some eight years, almost exterminated some species, and greatly depleted others. It moved comparatively slowly to the Zambezi, but, south of that river, was carried rapidly through the sub-continent at the exact rate of the ox transport of the country. After it had spent itself, and it became possible to take stock of results, it was apparent that the regions through which it had passed presented a totally different aspect in regard to the presence of such species as buffalo, eland, and kudu. With the conclusion of the rinderpest epidemic, the curtain was rung down upon the second act in the process of extermination.

The third act opened with attacks on the animals of Africa from the east, west, and north, as well as from the south. Though this state of things is of relatively recent origin, the act would be but a short one, if dependent for its duration on the methods pursued by some latter-day so-called sportsmen and settlers, who, with infinitely less excuse than had the old Boer pioneers, attempt to out-Herod Herod. Indeed, the efforts of some modern gunners to emulate the ruthless massacres of the last century are tempered only by the more enlightened legislation of recent years, and by their own comparative incompetence. In itself, this lack of skill, and frequent ignorance of the rudiments of hunting craft would not be of much assistance to the game. The small-bore repeating modern rifle is a murderous engine of destruction, and the more unskilful the hands which hold it, the greater the number of the poor wounded creatures which drag themselves away to die in torture. The worst of it is that, disregarding all thus injured, the genial shootist often energetically persists in actually killing up to the limit allowed him under the law, and, having at last satisfied this ambition, returns to vaunt the size of his bag, and to receive in perfectly good faith, and with the consciousness of good work well done, the congratulations of admiring friends: sometimes even to advertise his prowess in print.

It is no uncommon sight in British East Africa to see unhappy animals, their bodies hunched up with pain, or dragging one smashed and mutilated leg, making pathetic endeavours to keep up with the herd to which they belong. On the borders of the game reserve in the Transvaal, during the shooting season, numbers of unfortunate wounded creatures, especially reedbuck, which abound in certain places, may be seen taking sanctuary. Poor wretches, swinging one useless leg, are common enough; but the saddest sight of all is to see a ewe on the point of death, still trying to give suck to her young lamb; or to happen upon the latter standing pathetically by the body of its dead mother, which has perhaps long been wandering about in agony, sustained only by her overwhelming anxiety for her offspring.

For all this unnecessary suffering, I am strongly of opinion that the modern small bore rifle must take a very large share of the responsibility. In expert hands it may at times be a good enough weapon; though even so, I think that the temptation to fire at too long distances leads to much promiscuous wounding, and when, as often happens, no blood spoor is visible, even the most experienced and conscientious hunter may be led to believe that he has missed his mark, whereas he has actually more or less seriously injured his quarry. The inexperienced or uneducated hunter and the hooligan gunner, however, are restrained by no considerations such as those which govern the dealings of the true sportsman with game. The repeating and long ranged small-bore rifle, with its flat trajectory, lends itself only too readily to the process known as "browning" a herd at distances which ought to be prohibitive. In the old days of the single-barrelled muzzle loader, with its short range and heavy bullet, the dismounted hunter had to stake his chance to a great extent upon the first shot, and success was a tribute not only to marksmanship, but also to his proficiency in the much more difficult art of venerie. Indeed, had it not been for the custom of riding down the game on horseback, universal in former south African days, no doubt the high veld fauna would have maintained its existence for a much longer period than was actually the case. But, under modern conditions, the temptation to put in shot after shot in quick succession is frequently overwhelming. When dealing with a herd, it is often well nigh impossible to distinguish the wounded beast from his companions, and this is the moment when young, over eager, or reckless hunters may be induced to fire at an animal which they hastily conclude was their first mark. Some of the more heedless, indeed,

will, in all probability, never waste a thought on the subject, but will go on firing until one or more fall, when, having secured their trophies, they will callously disregard any further damage which they may have chanced to inflict.

Some people are strongly of opinion that galloping game on horseback should be rigidly prohibited under all modern game regulations; albeit perhaps the most exciting and enthralling of all methods of hunting, it is a most deadly practice, as it tends to scatter herds and injure pregnant females in a most serious manner. Though this may be a counsel of perfection, and impossible of achievement under existing conditions, it would be of undeniable benefit were every person, before being admitted to the privilege of a game licence, forced to pass some test in marksmanship, and made to answer some elementary questions in hunting lore, and regarding the nature of the animals he proposes to pursue. In this Utopia, the use of any but rifles of large calibre (say nothing under a ·350 bore) of pointed bullets, and of all weapons of a repeating nature, might be forbidden to any but really skilful and trustworthy hands.

Hunting parties in Africa may be classified under three heads. Those who are out for scientific purposes: those who pursue the game for sport and trophies: those who seek profit alone. The first, of course, deserve, within limits, encouragement at the hands of local administrations, and, in fact, usually obtain all facilities. Professional hunters, paid by museums or zoological gardens, to obtain specimens, or young animals, though often included under this head, nevertheless, are frequently, if not the right sort of men individually, responsible for very great destruction, especially if they combine trading in ivory and skins with their more commendable employment. The scientific gate, indeed, should be carefully guarded at all times, lest the exceptional facilities accorded should induce others than the elect to attempt entrance thereby.

Expeditions formed for sporting purposes alone are, in most parts of Africa, the sources whence the greatest pecuniary benefit to revenue is derived, and therefore indirectly do a good deal to supply arguments in favour of the continued existence of the game from a purely economic standpoint. Many, perhaps the majority, of the individuals composing these parties are animated by sportsmanlike ideas, and desire to do the right thing. Nevertheless, it is amongst them that the bulk of those who sin from ignorance, inexperience, and excitement are to be found, as well as those who, from lack of dexterity in the use of firearms, inflict much suffering upon animals.

There are, too, undoubtedly, a few men who when once committed to the wilds deliberately perpetrate atrocities which, taking into consideration their social standing and education, are the more reprehensible. However, on the whole, legitimate shooting parties, out for really sporting purposes, have undoubtedly a credit balance on their side.

We now come to the mere profit hunters. Fortunately it has become more and more difficult for those who would destroy the wild fauna of Africa for the sake of mercenary greed to gratify their sordid desires. The custom dies hard in such countries as south Africa, where, up to a few years ago, a huge trade still continued in hides, horns, and biltong; and the sub-continent contains many hundreds, nay thousands, of persons, who formerly eked out a livelihood or assisted their income in this manner. Naturally to these men the new conditions are irksome, and so ingrained is the idea of merciless slaughter, if possible for profit, that even town dwellers and recently arrived settlers seem to have imbibed some of the poison. In the present status of African game, the profit hunter must everywhere be sternly restrained, if the wild creatures are to remain available for the investigations of naturalists, the legitimate aspirations of sportsmen, and the visual gratification of the public of another generation. It is the profit hunter who primarily has been responsible for the disappearance of game from many parts of south Africa in the past. It is to him we must return thanks for the many great deserted wildernesses unbrightened by sign of mammalian life, now only too common south of the Zambezi. Some twenty years ago a certain man used to make a speciality of killing giraffes in the Transvaal low country; the hides and tails were sources of profit, and the bones had some value as manure. Several waggon loads of giraffe shin bones were, in one season, sent down country for shipment to Durban by this single individual, and the only satisfactory point in the incident is that they did not pay for carriage. During the construction of the Selati Railway from 1892 to 1894 many trucks were daily despatched to Komati Poort for the Johannesburg market, piled high with the carcases of impalas, kudus, and wildebeests, animals at that time very numerous all along the line. It was no uncommon thing for one rifle to account for from ten to fifteen impalas a day for weeks at a time, and there were many at work. The same baleful instincts still exist, not only in south Africa, and seek but a little weakening in legislation in order to spring into active life.

The writer has not said anything on the subject of elephants: ivory has always been a regular article of commerce from earliest times, hence the elephant, where not specially protected, has practically disappeared from all portions of Africa frequented by Europeans. Indiscriminate slaughter has been lately checked by legislation, but it cannot yet be said that the restraint is anything more than partial. The wholesale destruction some years ago of elephants in the Lado Enclave, at the hands of men hunting with neither authority nor licence, shows how difficult it is to protect animals where death implies pecuniary profit to the slayers.

Although the export of hides and heads of game animals for sale has been greatly restricted in many parts of Africa, yet within the continent itself, especially in the coast towns, there is a considerable demand for these articles. Nearly every house, and practically every saloon-bar in south Africa, is decorated with trophies of the chase; which implies a considerable annual trade. There are, too, or were, until very recently, parts of the African coast where trophies were openly sold by the natives, being brought off to the ships and snapped up by eager tourists for the purpose of gratifying some inexplicable whim. The only way to stop the killing of wild animals for gain seems to be for local administrations, each in its own jurisdiction, to place penalties on the sale or purchase of trophies of all kinds, at any rate without licences. The Transvaal Biltong Ordinance forms an excellent example of a principle which might be extended.

The cessation of intertribal warfare, and of the slave trade, consequent on the introduction of the European *régime* in Africa, freed the native from many of the restrictions which formerly hampered his movements. In some parts of the continent—notably in Portuguese territory—he almost invariably, at the present day, possesses a firearm of some kind, while in others, mainly under the British flag, he is especially exempted by ordinance from the provisions of the game laws governing the actions of the white man. It is true that formerly the natives were unable to effect much permanent harm to the game; but it is apparently forgotten that even where they are not in possession of firearms they have now far greater facilities for destruction than in the old days: that larger areas of country are open to them: and that they have, to a great extent, lost, through being accustomed to go long distances to work for the white man, the old fear and distrust of going far away from their own homes. When they are in possession of the weapons of civilisation, the harm

they do is greatly accentuated. Though one white hunter may possibly kill far more animals in a month than a single native would bring to bag in a year, the natives present in a country and at work hunting very greatly outnumber the white men, and, moreover, hunt throughout the year, whenever they find themselves in want of meat. There is just one argument in favour of the native from a sporting standpoint. He really hunts his animal; crawls close up; usually makes certain of his first shot, and eventually, in nine cases out of ten, secures his quarry. Where profit is to be made, he is often as keen to trade in trophies of the chase as any European; but, when he is left to himself, he kills merely for meat, and to obtain the use of the skin, tail, and sinews for domestic purposes. Thus with him nothing is wasted. It is beyond question that in many of the districts of Portuguese East Africa, and in the neighbourhood of the lower Zambezi, game has been nearly exterminated during the last twenty years by natives alone, almost unassisted by Europeans. The writer recollects that, while camping out some three years ago in the Inhambane district, every morning and evening he heard two or three shots, and the elands there were on the point of extinction, solely at native hands. In southern and north-western Rhodesia there seems no doubt that in many parts the natives, both indigenous and from neighbouring Portuguese and other countries, are rapidly getting rid of the animals. In the Sudan, again, rumours are current of wholesale destruction both by Arabs and by Blacks in the more remote parts of the country. A study of the Blue Books will show us a very similar condition of things obtaining in the British possessions on the west coast.

Fewer statistics are available from French, German and Belgian Colonies, but there seems little reason to suppose the existence in their out-of-the-way districts of much greater restraint upon natives, or stricter enforcement of regulations as compared with Portuguese and British possessions. Even in the Transvaal, where, probably, game laws are less favourable towards, and more stringently enforced against, natives than anywhere else in Africa, we have still to contend with a very considerable amount of game destruction on their part. Nor is it difficult to infer from long experience of the guile shown by the African in avoiding detection, what must take place where he finds himself in touch with conditions more harmonious to himself.

The last but by no means the least important element which presents itself for consideration, as bearing on the destruction of the fauna, is that of the white settler. In south Africa, so far as all the

high and reasonably healthy districts are concerned, the question has long been settled by the complete extirpation of the wild animals; a proceeding which no one now regrets more than the settler himself. How completely popular sentiment has altered in this respect may be seen in the care wherewith those farmers who are fortunate enough to have a few blesbuck or springbuck remaining on their land, preserve them, and how particular they are in limiting the numbers which may be annually shot. Education in the ethics of game preservation has made great strides in the provinces of the Union, and we may even see the sun rise on the day when landholders will be as anxious to see the fauna preserved on waste, and on Government land, as they now are for its safety upon their own farms.

A less progressive view, it is to be feared, is at present prevalent among a section of the new settlers in other parts of Africa. These people, for the most part, new to life in the wilderness, are astonished and obsessed by the swarming thousands of animals which they see around them, much as were the early pioneers in south Africa. Unlike the latter, however, they find themselves summarily checked in the process of reduction, by various ordinances and regulations, which forbid them alike to kill for profit or, beyond a certain point, to slay for the mere sake of slaying. It all seems very harsh and arbitrary, and sometimes the settlers have not been slow to make their voices heard in the matter. Nevertheless, they do not seem always agreed as to the exact nature of the reforms to be adopted, for while each man is firm in the expression of his desire for Government action, there is not universal agreement as to method. In one breath a fiat may be demanded for game extermination, in order that the hides and horns may be exported for sale to the great advantage and profit of the more impecunious; in the next, that rich Americans and Europeans shall be induced to come over and rent the farms of those same impecunious ones as shooting boxes. It is, however, a sad but obvious fact that science has as yet discovered no means of eating all one's cake and at the same time keeping it intact. It is difficult to conceive how at one and the same time the settlers could benefit, individually, by the cash they might receive as the result of the extermination of the fauna, and collectively, by the considerable sums of money which sporting parties, who would not come if there was no game, annually bring into the country. Moreover, it is surprising how frequently those who have the least to lose through feral depredations, are loudest in their complaints. On the other

hand, though the cry against game may not always be a genuine one, nor altogether uninfluenced by the desire to exploit the fauna for purely selfish ends, perhaps accompanied by the wish to have an incidental "slap at the government," it is undeniable that a plethora of wild animals in the immediate vicinity of permanently settled and cultivated country may and does cause considerable damage, in eating up pasture, destroying crops, and breaking fences. Whether the actual harm done is not in some instances amply compensated for by the cheap meat and leather which is obtained in return is another question: but the fact remains incontestable that each man should have the right to say whether he will or will not have game preserved upon his own farm; and should be permitted, anyhow where that farm is a fenced one, and where, therefore, the animals are technically his own property, to shoot them without a licence. In the case of unfenced land, the question is harder, for neighbours may differ in their opinions regarding the ownership of migrating game. While, speaking generally, settlers in a new country have earned the right to say whether they want wild animals to go on to their land at all, and to demand due protection, if they do not, it is still the duty of the administration to see that the existence of the fauna as a whole shall be in no way imperilled, and especially that it shall not be exploited for the benefit of a few individuals who may or may not eventually make the country their permanent home. There is nothing to indicate that the present fauna of east Africa, for instance, is richer than that of the Transvaal was fifty years ago; and seeing to what a pitch of perfection modern weapons have attained, there would appear nothing extravagant in the prophecy that five years of free shooting for profit would see the end of it. As a matter of fact there is little room for doubt that, did the game disappear entirely, the settlers, probably of the present, and most certainly of the next generation, would be the first to lament the policy which led to this lamentable result. It is a remarkable phenomenon in human affairs how seldom the experience of others seems to turn the scale of action. There are, I take it, very few farmers in the Cape Colony, the Orange Free State, or the Transvaal, who would not be glad to see an adequate supply of game upon their land. Indeed, the writer is constantly dealing with applications as to the possibility of reintroducing various species from the game reserves to private farms, and only the question of expense and the difficulty of transport have, up to the present, prevented this being done on a considerable scale. When, therefore, the relatively small

populations of such protectorates as are still well stocked with game are heard airily discussing the advisability of getting rid of it as quickly as possible, one realises how often vain are the teachings of history, and how well nigh hopeless it is to quote the result of similar action elsewhere. It remains only to trust that things may be seen in truer perspective ere it is too late, and that those in whose temporary charge it is may not cast recklessly away one of nature's most splendid assets, one, moreover, which, once lightly discarded, can never by any possibility, be regained.

It is idle to say that the advance of civilisation must necessarily mean the total disappearance of all wild animals.[1] This is one of those glib fallacies which flow only too readily from unthinking lips. Civilisation in its full sense—not the advent of a few scattered pioneers—of course implies their restriction, especially as regards purely grass-feeding species, within certain definite bounds, both as regards numbers and sanctuaries. But this is a very different thing from wholesale destruction, that a few more or less deserving individuals may receive some small pecuniary benefit, or gratify their taste for slaughter to the detriment of everyone else who may come after. The fauna of an empire is the property of that empire as a whole, and not of the small portion of it where the animals may happen to exist; and while full justice and encouragement must be given to the farmer and pioneer, neither should be permitted to entirely demolish for his own advantage resources which, strictly speaking, are not his own.

[1] See footnote in Chapter VII. "Game in the Orange Free State."

CHAPTER III

THE PRESERVATION OF GREAT GAME

Beginning of the Movement—Game Sanctuaries—Results of the Movement—The Camera—Sparing of Females—The Sportsman's Platform—Local Officials.

THE last chapter contained some incidents in the long story of the progressive annihilation of the African fauna. The present one will attempt to deal with a brighter side of the question, and consider the means which have been taken to combat, and if possible overcome, the factors which threaten the continued existence of large numbers of beautiful and harmless creatures.

The idea of protecting the fauna, and especially the larger mammals, of this continent, is of recent growth. Originating in the indignant, if belated, protest of civilisation, alike upon economic and sentimental grounds, against the long-continued, barbarous, and often wanton war waged upon the animal creation throughout Africa, it evidently found expression in the year 1900. In May of that year all the European Powers owning possessions in Africa, signed a Convention binding themselves to make provision for the prevention of further undue destruction of the wild game. The regulations proposed and subsequently adopted embraced:—

1. Sparing of females and immature animals.
2. Establishment of close seasons and game sanctuaries.
3. Absolute protection of rare species.
4. Restrictions on the export for trading purposes of skins, horns, tusks, &c.
5. Prohibition of use of pits, snares, and game traps.

These provisions really cover all the ground necessary, and no doubt were it possible duly to enforce them, and to carry them out everywhere to the letter, no further anxiety regarding the future need exist. It is, however, one thing to draw up in the study, or office, comprehensive and unimpeachable regulations, and quite another to get them practically executed, at least in so far as a country such as savage Africa is concerned. While in some places local control is non-existent, in others officials may be indifferent, possibly even venal; some settlers object to the presence of game on economic or

AFRICA
SHOWING GAME RESERVES
SITUATE IN BRITISH TERRITORY
TUNIS
TRIPOLI
EGYPT
MOROCCO
FRENCH SUDAN
EGYPTIAN SUDAN
ERITREA
FRENCH SOMALILAND
BRITISH SOMALILAND
ITALIAN SOMALILAND
ABYSSINIA
GAMBIA
PORT GUINEA
SIERRA LEONE
LIBERIA
NIGERIA
GOLD COAST
TOGO
KAMERUNS (German)
SPANISH
FRENCH CONGO
CONGO FREE STATE
UGANDA
BRITISH EAST AFRICA
GERMAN EAST AFRICA
PORTUGUESE WEST AFRICA (Angola)
NORTHERN RHODESIA
Portuguese Nyasaland PORTUGUESE
GERMAN S W AFRICA
S RHODESIA
EAST AFRICA
BECHUANALAND
TRANSVAAL
ORANGE RIVER COLONY
NATAL
CAPE COLONY

other grounds, while little efficient check on game destruction by natives can be exercised throughout the greater part of Africa. Thus it has gradually become clear that the only efficient method of preserving species is by the establishment in suitable situations of game reserves, or, more correctly speaking, sanctuaries, where the animals shall be protected from all human, and so far as possible, from all natural foes.

Now it is obvious that to be efficient such sanctuaries must fulfil certain definite conditions. They must be of sufficient size to allow not only of the annual migrations of the game to and from the neighbourhood of the permanent water, but must be large enough to permit of more extended pilgrimages induced by seasons of exceptional drought. They should be already stocked at the time of their selection with a number of each of the species indigenous to the country, sufficient to obviate all fear of degeneration by inbreeding. While containing pasture and water suitable for their natural inhabitants, they should not, either from desirability of climate, richness of soil, or the presence of mineral wealth, be likely to offer inducements to white settlement. They should contain as few native inhabitants as possible. (Complete absence of the latter is rather a disadvantage than otherwise.) They should be in fairly close contact with civilisation; that is, in situations where the white man has easy access to the game, and therefore threatens its existence in the immediate future. The establishment of unpoliced sanctuaries in very out-of-the-way places, where the game is in no immediate danger, is of but secondary importance, and, as Colonel Roosevelt remarks, "The only men likely to be incommoded are those who respect the law."

Once established in a suitable locality, the sanctuary in order to be effective, must have certain special regulations framed for its benefit, and must be provided with a staff of white men and natives adequate to its requirements. The first requisite is absolute inviolability. No considerations of influence, rank or money, should be permitted to weigh, where it is a question of shooting in a reserve. That anything of the kind should be allowed, *ipso facto*, destroys the whole aim of the project, and reduces the sanctuary to the status of a mere "preserve" that is, an area wherein animals are preserved for the use of a privileged few. Regulations governing and restricting traffic, and providing due penalties for breaches of the law, must next be framed. The staff must be organised on the most efficient system possible, in relation to the grant allowed; and the

suppression within bounds of carnivorous and other animals inimical to the ends in view, must be undertaken.

The main object of a sanctuary should be to secure within its boundaries the complete preservation of all species indigenous to the area, and to allow any surplus of animals to emigrate to the surrounding country for the benefit of sportsmen and local residents. The scientific study of habits, the capture of specimens for zoological purposes, experiments with certain species with a view to domestication, together with tests bearing on various tick or fly-borne diseases, all follow in due course, provided the means are adequate.

The advantage of the sanctuary system over any other method of preserving game is probably as well illustrated in the Transvaal as anywhere in Africa, seeing that there the various creatures, elsewhere scattered over fast and imperfectly known areas, are all at hand under the eyes of the observer. At the time of the establishment of the game reserves in 1902, there was probably little difference between the status of the game therein and of that existing along the Rhodesian Border. Now, although the latter districts—which were not included in the game reserves—were constantly patrolled by police, though the killing of all big game was entirely prohibited, and although severe penalties were threatened to those infringing the law, in four or five years it became quite apparent that the game was on the verge of extermination at the hands of both white men and natives. Notwithstanding great activity on the part of the authorities, it was found almost impossible, in that thickly bushed and trackless country, to obtain convictions against offenders. The responsible government, which came into power in 1907, proved fully alive to the requirements of the case, and lost no time in promulgating an ordinance, restricting the sale of biltong throughout the Transvaal. This, though not an absolute deterrent, had at least the immediate effect of limiting the activities of professional hunters, and probably of saving the game in the remoter parts of the country from complete extermination within two or three years. Meantime, on the eastern border, in the declared game reserve, the animals had not only increased enormously, but had been considerably recruited by others, seeking sanctuary from Portuguese territory and elsewhere. The staff was not a large one, and the true secret of the immense difference in the standing of the game, as compared with other areas, lay in the special traffic regulations, and the total prohibition of the carrying of firearms by the public while travelling. Without some such provision, seeing that it is quite impossible to be cognisant of

what men are doing in a wild and pathless forest country, their actions would have to be left to their sense of honour, not always, alas! a reliable quality where game is in question.

The game reserves in British East Africa have not yet arrived at the state of development which has become necessary in the south. Game is still numerous outside their boundaries, and the time of the game rangers is, to a great extent, taken up in the performance of duties entirely unconnected with the reserves, which have, in consequence, to be left more or less to fend for themselves. Undoubtedly at present this is of small consequence. At a later date, when game outside has greatly diminished, the care of the reserves themselves will, no doubt, attain to its true measure of importance.

It is an unfortunate but undeniable fact that most enterprises, however generally beneficial they may actually be, are apt to meet, from one quarter or another, with opposition of a greater or less degree of intensity; and neither the preservation of big game in general, nor game sanctuaries in particular, forms an exception. To a population emerging from the conditions of early settlement, the prospect of game increasing undisturbed almost under its eyes within a neighbouring reserve, whilst it is less plentiful, even scarce, in places to which access is free, often conveys a sense of injury, and wits are set to work to devise some method of altering the obnoxious state of things. Long experience has taught the writer that three main arguments are always used against the policy of game reserves. The first and most common is that, by shutting up areas for the preservation of wild animals, a government is hindering the development of the country; white settlers and their families may not go and live therein; and the prospector may not wander about in search of that great fortune, which, nearly from cradle to grave, he is ever hopefully, but generally fruitlessly, seeking. Provided a reserve has been properly selected at its inception by competent persons, this argument needs no refuting; but this fact does not prevent its being trotted out again and again with wearisome iteration. The second is connected with the diseases which game are believed to harbour, and so are likely to communicate to domestic creatures. The history of epidemics in the past shows that, so far from having been acquired from the indigenous mammals, they were introduced into Africa and communicated to the game by imported domestic animals. Regarding tsetse-fly and tick diseases, I shall have something to say in another place. The argument generally brought up as a forlorn hope is to the effect that game sanctuaries tend to act as breeding

grounds for carnivora, which, having, it must be supposed, first eaten up all the other denizens of the reserves, will be tempted to sally forth in order that they may prey upon the flocks and herds of the farmers and natives living in the vicinity. But the ordinary carnivore, provided that there is plenty of his natural prey to hand, usually prefers seeking it in his native forest to venturing into the dangerous neighbourhood of man. The chief danger to domestic animals comes from old and partially decrepit beasts which are no longer able to hunt with success. Moreover, if the officers responsible for the well-being of a reserve are zealous in performing their duties, the due limitation of the carnivora should present no insuperable difficulties when carried out in a methodical manner; and, far from increasing, the beasts of prey ought positively to decrease, while on the other hand the game multiplies unhindered. Thus, unless driven out by persecution at the hand of the rangers, it seems likely that the resulting decrease in competition would act as an incentive to them to remain within their accustomed haunts.

In the Transvaal, enemies of game protection, though making great capital out of the carnivora, have not, so far at least, instituted a grievance against the game itself, as is the fashion in some other parts of Africa, where the lion and the wild dog have been sometimes hailed as benefactors, in that they destroy those ravening monsters the hartebeest and the gazelle!

In spite of a certain amount of local opposition, which perhaps is to be expected, and which after all shows no great ingenuity or originality in forging its literary thunderbolts, there can be no shadow of doubt that the prospects of the fauna throughout British Africa, if not altogether satisfactory, are at least very much more encouraging than they were a few years ago. The Society for the Preservation of the Fauna of the Empire has done good work by calling the attention of the powers that be to abuses, and to necessary legislation; while local administrations have done much to check slaughter, whether by white men or natives. Among the Crown Dependencies, Nyasaland, Uganda, Somaliland, East Africa, and the Sudan are not only provided with excellent codes of laws, and even sanctuaries, for the better protection of the game, but the two latter are in possession of more or less organised game preservation departments. North-eastern Rhodesia, Nyasaland and Uganda are countries so difficult of access, and so climatically prohibitive throughout much of their area, that they at present offer few inducements either to the sportsman or to the settler, and the officials stationed there have a practical

British Nyasaland, showing the Game Reserve in Central Angoniland.

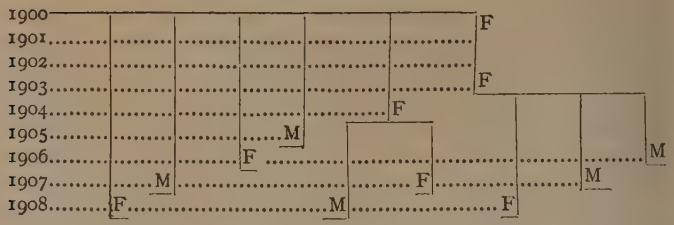
monopoly of the shooting. In some other British possessions, indeed, from one cause or another, the future well-being of the game appears less an object of official solicitude: but, generally speaking, under the Flag, there has been an effort to safeguard the fauna, perhaps as great a one as may be expected in the present apathetic state of public feeling. A good deal of interest also is taken in the future of wild animals in their relationship to man, both in the Congo and in German East Africa, where experiments in domestication have been and are being carried out with various species. Fairly comprehensive game laws are indeed, I think, common to all European possessions. The Portuguese recently not only prohibited all shooting in the Lourenço Marques Province, but established reserves there and near Inhambane. It must be admitted that these enactments would inspire more confidence could it be believed that the native with his musket is as effectually checked as the European, whose movements and actions are very much easier to trace.

But when all is said and done, such institutions as game laws and game sanctuaries are but temporary measures of a makeshift character, dependent to a large extent for their permanence and efficient administration upon the policy of changing governments, and the only hope of ultimate salvation for the game lies in the formation of a sound and enthusiastic public opinion, which will insist on the sparing of females, the limiting of numbers of all species shot, the abandonment of the curious craze for large bags, and of the idea of deriving pecuniary benefit from the slaying of wild animals. It is, of course, a truism that such are the ideas of every right-minded sportsman at the present day; the writer can, however, assure those who may think it perhaps unnecessary to emphasise these points, that there are parts of the Empire where far other views are widely held, and furthermore just by those persons whose conversion to sound principles will eventually have the most wide and far-reaching effects. That the day will come when a stronger and healthier public opinion will prevail, there seems every reason to believe. The formation throughout the Transvaal of local game protection associations, and the ever-increasing interest which is shown in the nature and habits of animals, as opposed to the mere anxiety to find out the best way to kill them, indicates how the wind is beginning to blow. There is much to induce the hope that the people of South Africa will from now onwards use every effort to ensure that the remains of their once unsurpassed fauna shall be passed on as a heritage to their successors of another generation.

Moreover, I believe that as time goes on, the camera is likely in great measure to take the place of the rifle as a hunting weapon. The charm of camp life and of the wilderness remains identical, while the skill required in woodcraft, in patience, coolness, accuracy, and perseverance is incomparably greater. At the end of a successful stalk, in the place of a mere bleeding carcase, hacked and mauled by a crowd of shouting savages, the living animal may still stand unharmed in his pride and beauty; instead of a heavy skin and head, perishable, and difficult of transport, there remains the permanent image of a wild creature in its native haunts, to recall the incident to the memory in future days. No one can, I think, contemplate the splendid photographs taken by various enthusiasts in east Africa, without feeling how much more admirable it is to be a naturalist photographer than a mere shootist, and their beautifully illustrated works certainly rank as records of high achievement in the field of African sport.

In the meantime, and as there seems no present prospect of any general abandonment of rifle for camera, I should like, for the benefit of intending sportsmen, to say a word on the sparing of females. As a rule, of course, men out specially for trophies try to bag only males, but when it comes to shooting meat for the camp, there are many who are not very particular regarding the sex of their quarry. It is, of course, often difficult to distinguish sex in those species where male and female are both horned, and some care is necessary; but females are almost invariably smaller, and furnished with more slender horns than the other sex, while in a herd, it may be taken as a good working general rule that the leader is always an old female, while the senior male in the troop brings up the rear.

The sparing of females forms to a great extent the crux of the question of game preservation as things are at present. So long as a sprinkling of able-bodied males remain, reproduction of species is not interfered with, but let a female be killed, and a whole series of yet unborn animals and their potential progeny, in turn, are denied life. How remarkably this sparing of the females of the *bovidæ* conduces to their progressive increase, the following diagram may indicate. It represents the gross natural increase from one female during a period of six years of production, and is based on the assumption that the ratio of females to males born is as six to five, and that young females have their first calf at some period during their third season—so far at least as the larger antelopes are in question.



1900, 1; 1901, 1; 1902, 1; 1903, 2; 1904, 3; 1905, 4; 1906, 6; 1907, 9; 1908, 12.

It will be observed that, under ordinary circumstances, if the first two calves are females, the total number of animals at the end of the year 1908 will be twelve.

But suppose the original mother of the family to be killed during her fourth season, that is to say after she has reared her first calf, it is obvious that the whole of the left-hand portion of the diagram must be deleted, and the total at the end of 1908 will be but five, or, if the first calf (born in 1903) happened to be a male instead of a female, only *one*—and this as the result of the killing of but one female. The rate of production of smaller antelope, such as impala, is more rapid, for the females produce offspring in their second season, and so there is a relatively larger increase.

It seems to be one of nature's provisions that the females of most wild animals are, generally speaking, more alert and nervous than the males, and, therefore, in proportion to their numbers, less frequently fall victims to the stealthy cat tribe than do the solitary members of the other sex. It is thus ensured that the destruction of the mothers of the race by natural means shall not exceed the due bounds of economy, nor be such as to hamper or retard proper progressive increase. It has been left for civilised man, and, of late years, for the native also, with weapons of precision, to interfere with and upset the balance which has been so carefully and so accurately adjusted by natural experiments lasting through countless ages. The tyro should recollect that, in hunting big game, he has duties to perform as well as pleasures to gratify. Such an enormity as the making of a "bag" should be anathema. Killing wild animals in Africa, where the hunter can do little or nothing to make good the havoc he creates, is a very different matter from shooting pheasants in England, where the ground is carefully restocked each year, and where a big bag is the avowed object of all the initial trouble taken. Yet many people who should know better, would

appear inclined to confuse the two things. In south Africa, the term "sportsman," so far as shooting is concerned, has long lost its true meaning, for it now covers the man who shoots all that comes in front of his gun, to gratify perhaps, the basest motives, as much as him who shoots with discrimination and judgment.

I take the liberty of inserting here the admirable views of Dr. Wm. J. Hornaday, Director of the Zoological Park, New York, upon game protection generally, and especially desire to emphasise his summary of the cardinal principles, which should govern all sportsmen in their pursuit of game. The New York Zoological Society takes a vivid and untiring interest in the progress of game protection, not only throughout the United States, but all over the world, and their admirable Annual, as well as the publications of the Boone and Crockett Club and other American organisations, should find a place on the tables of all those who love the wild creatures of the forest, and are loth to see them altogether crushed out under the heel of a ruthless and too utilitarian civilisation.

Dr. Hornaday says:—

"It is my belief that much strength may be gained for the general cause of game protection by a definite agreement between the sportsmen of the world on the cardinal principles that apply everywhere to the pursuit and preservation of large game. Such an agreement would be received in all law-making bodies with respectful consideration, and, if sufficiently comprehensive, it might prove of great value in campaigns for better game laws and for the creation of new game preserves. Fifteen cardinal principles have been drawn up to cover not only the conditions existing to-day, but also to meet others that seem of certain development in the near future. For the countries of Asia and Africa it is easy to substitute for 'Indian' the word 'native.'

"The adoption of this platform by sportsmen's organisations, and by unattached sportsmen, is respectfully invited; and a careful register will be kept of all who advise me of their endorsement. In conclusion I beg to assure all sportsmen that in this matter the writer has no personal ends to serve, either for himself or for others.

"A Sportsman's Platform.

"1. The wild animal life of to-day is not ours to do with as we please. The original stock is given to us *in trust* for the benefit both of the present and the future. We must render an accounting of this trust to those who come after us.

"2. Judging from the rate at which the wild creatures of North America are now being destroyed, fifty years hence there will be no large game left in the United States nor in Canada outside of rigidly protected game preserves. It is therefore the duty of every good citizen to promote the protection of forest and wild life, and the creation of game preserves, while a supply of game remains. Every man who finds pleasure in hunting or fishing should be willing to spend both time and money in active work for the protection of forests, fish and game.

"3. The sale of game is incompatible with the perpetual preservation of a proper stock of game; therefore it should be prohibited by laws and by public sentiment.

"4. In the settled and civilised regions of North America, there is no *real necessity* for the consumption of wild game as human food; nor is there any good excuse for the sale of game for food purposes. The maintenance of hired labourers on wild game should be prohibited, everywhere, under severe penalties.

"5. An Indian or other native has no more right to kill wild game, or to subsist upon it all the year round, than any white man in the same locality. The native has no inherent or God-given ownership of the game of any land, any more than of its mineral resources; and he should be governed by the same game laws as white man.

"6. No man can be a good citizen and also be a slaughterer of game or fishes beyond the narrow limits compatible with high-class sportsmanship.

"7. A game-butcher or a market-hunter is an undesirable citizen, and should be treated as such.

"8. The highest purpose which the killing of wild game and game fishes can hereafter be made to serve is in furnishing objects to overworked men for tramping and camping trips in the wilds; and the value of wild game as human food should no longer be regarded as an important factor in its pursuits.

"9. If rightly conserved, wild game constitutes a valuable asset to any country which possesses it; and it is good statesmanship to protect it.

"10. An ideal hunting trip consists of a good comrade, fine country, and a *very few* trophies per hunter.

"11. In an ideal hunting trip the death of the game is only an incident; and by no means is it really necessary to a successful outing.

"12. The best hunter is the man who finds the most game, kills the least, and leaves behind him no wounded animals.

Sabi Bridge, N.E. Transvaal.

A Ranger's Cottage in the Sabi Game Reserve, Transvaal.

"13. The killing of an animal means the end of its most interesting period. When the country is fine, pursuit is more interesting than possession.

"14. The killing of a female hoofed animal, save for special preservation, is to be regarded as incompatible with the highest sportsmanship, and it should everywhere be prohibited by stringent laws.

"15. A particularly fine photograph of a large wild animal in its haunts is entitled to more credit than the dead trophy of a similar animal. An animal that has been photographed never should be killed, unless previously wounded in the chase."

I think there can be no two opinions as to the perfection of the spirit breathing through every word of the foregoing principles. They ought to be printed on the back of every game licence issued to sportsmen in every European protectorate in Africa. Would that every man who goes out after game in that great continent had even some glimmering of the unexceptionable ideas of sport which are there set forth. They are all expressive of instincts which animate the true sportsman, and which separate him by a fathomless and unbridgeable gulf from the reckless slaughterer and the profit hunter. Hats off to Dr. Hornaday!

The writer purposely refrained in the last chapter from speaking of the local official in connection with game destruction. An officer stationed in a good game district ought to be, and, in fact, frequently is, a very active and powerful agent in the cause of game preservation. He is, in the writer's experience, generally a good sportsman, who hunts from no instinct of reckless slaughter, and is able to exercise a very considerable influence not only in checking any excess by white hunters, but in restraining undue slaughter of game by the wild tribes which he controls. It is true many officials shoot a great deal, and do so upon very much easier terms than are extended to visitors. But it should be borne in mind that in remote and unhealthy spots where many, perhaps a majority, of the junior local officials of our various dependencies have to dwell, there is not only no society, but frequently no opportunity of meeting a man of their own colour, except at long and uncertain intervals. Shooting forms their sole relaxation. Again, a visitor passing through, or shooting in, a country, usually does so at the best time of year, when nature has put on her most benevolent smile, and the sun, genial and mild, gives no presage of the fiery tyrant, which a few months more will render him. But the official must, when that time arrives, still be

there in his wattle and daub house, with its leaky thatched roof. He must remain to see the blazing torment of the sun relieved only by the torrential rush of the tropical rain, the crashing of the thunder, and the blue and flickering glare of the destructive lightning. He must endure through the long summer months the attacks of the myriads of stinging and biting insects by day, and the even more harassing onslaughts of mosquitoes by night. Snakes and other undesirable creatures of all kinds invade his bungalow; his clothes and his linen are continually in a state of dampness. He is often down with malarial fever, with no one but his callous and ignorant native servants to attend to his wants. Racked with headache and with every bone burning with fever, he must himself select and administer his medicines, besides giving the orders for such nutriment as he may judge necessary, and, though he treats it as a matter of course, what he suffers is often far in excess of the recognition which his services receive. However torn by illness he may be, the work of the station must go on; interminable native disputes must be settled, and settled satisfactorily. Defaulters must be given fair trial, and the floods of contradictory and generally false statements which flow from the ready lips of countless witnesses must be sifted and garnered. The general discipline of the station must be kept at its normal level, and last but not least, voluminous piles of typewritten correspondence from headquarters, correspondence often as unnecessary as it is persistent, must be carefully, temperately, and judiciously answered. I think, then, he must be an ill-conditioned individual who can grudge the out-station official in an unhealthy district his shooting. Nevertheless, it is the duty of officials before all others to shoot with due discrimination and regard for the game. Though it is beyond doubt that most in fact do so, it would be idle to deny that there do occur exceptions to this rule. Now an official has quite exceptional hunting facilities. From his authoritative position he has at his disposal all the native talent of the district. He may obtain full information as to the exact locality of the animals, and he can choose his time for their pursuit. Therefore, if by nature a game slaughterer, there are given to him very considerable opportunities of satisfying his lust for blood. Fortunately, the sense of responsibility generally goes with power, and taken on the whole I think the influence of the British official makes for nothing but good as regards the game.

Let all sportsmen then, whatever may be their nationality, and whatever position they hold, unite in making it their aim so to let

A Scene in the Sabi Game Reserve, Transvaal.

their sport dovetail with nature's methods that while obtaining the maximum of enjoyment they may refrain from violating her laws and permanently injuring her works. It is, too, by the propagation of such ideas as those contained in "The Sportsman's Platform" that true sportsmen, and lovers of all that is best in nature, should find, at the present time, their interest and their duty.

CHAPTER IV

UNGULATES

Definition—Food—Gregarious Habits—Breeding Habits—Tsetse Fly and Game—Rinderpest and partial disappearance of Fly—Ticks, Game and Stock Disease.

THE *Ungulata*, or hoofed mammals of Africa, comprise several sub-orders. Those which contain the creatures usually classed as "big game" are the *Artiodactyla*, or even-toed ungulates, the *Perissodactyla*, or odd-toed ungulates, and the *Proboscidea*, which contains but one family, genus, and species—the elephant. The members of the first two sub-orders are all digitigrade, that is to say they walk on the tips of their toes; while, the nails or claws, found in other orders of mammals, have become, as it were, fused, or solidified into hoofs. Among the *Artiodactyla* the third and fourth digits are flattened on the inner surfaces, and reach the ground symmetrically, bearing the weight of the animal, and forming the split or cloven hoof; the second and fifth remain, in most cases, as mere unfunctional appendages, showing externally as accessory hoofs, and are, in fact, entirely absent in some species of antelopes. (In the hippopotamus, however, they are fully developed into a four-toed foot.) This sub-order is further split up into two divisions, first, the *Pecora*, or cud-chewing animals, comprising the *Bovidæ*, or horned ruminants, and the *Giraffidæ* (Giraffes and Okapis). In all these the incisors have disappeared from the upper jaw, and are supplanted by a callous pad, suitable, in conjunction with the tongue and lower incisors, for seizing and cropping herbage. They are further possessed of a very complex stomach, divided into no less than four compartments, and a comparatively small cæcum. The second division of the *Artiodactyla* is the *Suinæ*, which includes the hippopotamus family, and the *Suidæ*, or African wild swine. These are provided with incisors in both jaws, and a comparatively simple digestive apparatus. The *Perissodactyla* are made up of two families only, the *Rhinoceratidæ* and the *Equidæ*, or horse family, which, in Africa, is represented by the striped species, known as zebras, and by the wild ass of the north-east. This sub-order is believed to

have been specifically much more numerous in tertiary times than at the present day, and to have evolved earlier than the *Artiodactyla*, though the latter subsequently tended to become the predominant group nearly all over the world. The *Perissodactyla* have always either one or three toes functionally developed, incisors in both upper and lower jaws, usually canine teeth, a simple stomach, and a large cæcum.

Although all ungulates, with the exception of the *Suidæ*, are strictly herbivorous, there is a wide difference in the diet of the various species, some being grass eaters only, while others favour a leafy diet, and others again prefer roots and barks of various descriptions. Speaking broadly, animals which love the open plains are, as a rule, habitually grass eaters, while those which prefer the shady depths of the forests are generally browsers. Among the latter, too, there is a great diversity in the nature of the food consumed, for though there are many species of trees and bushes, the leaves and roots of which would appear to be indiscriminately assimilated by most species, there are others which support certain types of animals alone, and in the absence whereof from the forest these animals are not met with. Water is required in greatly varying amounts by different species; for whereas some will slake their thirst three or four times in the twenty-four hours, others, even during the dry winter months, seem to require very little liquid nourishment. In the more arid portions of the continent indeed, there can be no doubt that the indigenous animals are very largely independent of it.

Ungulates may be either gregarious or solitary in habit, though by far the larger number of the species incline in greater or less degree to the former mode of life. There seems, indeed, no hard and fast rule to guide attempts to diagnose the causes of their very diverse customs; for, although at first sight it may appear that purely graminivorous animals are found associated in larger companies than are those which seek either a mixed or a purely arboreal diet, the exceptions, such as elands and impalas, tend to upset any partially formed theories. It is true that the more strictly forest species of antelopes—generally speaking browsers—are decidedly less sociable than those favouring a more open terrain, and that they appear to rely largely on the concealment provided by the denseness of the covert, and their own individual senses, for protection. Plain-dwelling animals, on the other hand, associated in large herds and, when possible avoiding long grass, trust to the added facilities for

detecting approaching foes, provided by numbers and an extensive field of view. But in all these matters it is very difficult to come to any definite conclusion or to lay down any dogmatic rules; possibly because we do not know what causes of long standing may have combined to influence animals out of their original modes of life, and to drive them to seek an environment not originally native to them. Indeed, the more personal experience one has of wild animals and their ways, the more clearly it stands out how much caution must be exercised both in making up the mind regarding the factors which influence their individual and collective actions, and even in formulating any theories respecting them, except those of the most general character. It may be that, during a considerable period, certain events have been observed to take place with such marked regularity as to give colour in the mind to the impression that they are of invariable constancy. Just, however, as the problem appears comfortably solved, the observer is confronted by a whole sequence of incidents of so contrary a nature as to completely undermine the very foundations of the theory, and the mind is left floundering once more in the slough of uncertainty, whence it had fondly believed itself to have emerged. To him who has spent time, and taken trouble in studying the ways of African fauna under natural conditions, nothing can be more amusing than to read the uncompromising statements regarding habits of certain species often set down in print by superficial observers; unless it be to listen to the dogmatic assertions of occasional "old hunters," regarding what must, to a great extent, remain matters of pure speculation. Therefore, anything the present writer may hereafter set down in regard to breeding or other habits of animals must be regarded as correct only in so far that it is a true record of personal observations, extending over a considerable period, and has no pretensions to finality.

In countries so far removed from the Equator as to possess clearly defined summer and winter seasons, the former are undoubtedly the favourite breeding time of the fauna as a whole; but while certain species appear to have very regular, and comparatively short, calving and lambing seasons, which are delayed or accelerated only a few weeks at most, by the lateness or otherwise of the rains, others again appear to produce their young all through the hot weather. Certain species, too, rather favour the winter months, while o others, any precise period of the year seems indifferent. In equatorial countries, possessing no great variation of temperature throughout the year,

A Forest Scene.

and where the rainy seasons are less well defined, the last procedure would appear to be the rule, and it is doubtful whether in such areas breeding seasons are ever more than approximate.

When mating, the males fight fiercely for the possession of the females, and deaths, during these combats, are, among many species of antelopes, by no means infrequent; but eventually the strongest male, having driven away the others from the vicinity of the particular batch of ladies contended for, remains in undisputed possession; while the unsuccessful swains depart, either to test their fortune elsewhere, or to form themselves into little troops of independent bachelors. Now and then a young male may manage to detach two or three females from the main herd, and forms with them the nucleus of a new one. At the end of the mating season, there are generally found, in the case of most species, a single full-grown male associated in one troop with a certain number of mature females, and a sprinkling of young undeveloped animals of either sex—the last two seasons' calves in fact. The number of mature females thus found no doubt varies very considerably, and it would be rash to quote even approximate figures in regard to the majority of species; but amongst the impalas, about twenty appears to be the complement of a single male; while the writer once saw a waterbuck bull with thirty-five wives, a number no doubt, considerably in excess of the normal. At a later period of the year—speaking now of countries where a regular breeding season prevails among the majority of the species—the herds appear to expand; an increase caused, no doubt, by the temporary adherence of some of the younger males which have been leading an independent life during the mating period. When the actual calving time commences, the males often graze quite apart from their consorts, and join them permanently again shortly before the next mating season, when the struggle for possession recommences. When the lord of the harem has succumbed eventually to some younger and more active rival, he is permanently driven out of the herd, and such old bulls appear thereafter to lead a nearly solitary life, seldom being found clubbed together in bands, as are the younger males. Not infrequently, they join themselves for protection to herds of distinct species. Indeed, one of the commonest sights in the bushveld of south Africa is that of an old wildebeest bull running with a herd of impala, or zebra. Generally speaking, the horns of these old animals are very massive throughout, but have become worn from the tips downwards, so that in actual length they are seldom equal to those either of a good herd bull, or

of the best of a troop of young males. Probably the majority before long fall victims to the carnivora, but old animals may sometimes be found, which, by luck, or superior cunning, have managed to preserve their lives, until their bodies are well-nigh crippled through senile decay.

Generally speaking, the average time of gestation of the larger antelopes is about eight months, and the females giving birth for the first time—where regular breeding habits of a species favour observation—appear to produce their young about a month after the remainder. Most females, when on the point of calving, leave the herd and seek some sheltered and quiet spot, where the little one may lie concealed till strong enough to run with the others, while its mother seeks her food, frequently at some distance. It is at this time that the unsophisticated sportsman is very apt to mistake the breeding female for a solitary male, the more so if she should belong to a group in which both sexes are horned, or if she is partially concealed in bush. Probably a good many are thus killed. About the calving time also, great destruction is wrought by the carnivora, especially by the hunting dogs (*lycaon pictus*) which run down the little antelopes with great ease, and destroy large numbers of them. Natives, also, with their dogs, are very busy taking toll, both of the cows heavy in calf, and of the newly-born animals; so that the period is one of very great anxiety to the mothers, which become, in consequence, exceptionally watchful and uneasy. The weaning time is, of course, relative to the period of gestation, but long before they are independent of their mothers, in fact, within a very few days of birth, all young antelopes and zebras are capable of keeping up in the most surprising manner with the full-grown animals, even when the latter are going at full speed.

The question of the connection between the *bovidæ* and the insect-borne diseases which affect stock has given rise to much discussion.

Of the *trypanosome* diseases, which attack practically all domestic animals, and are known to be caused by certain organisms carried about, and injected into the blood, by various tsetse and other flies, science has not at present much of a definite character to say, and the experiments of Col. Sir David Bruce, with *nagana* disease in Zululand, form the chief of the few available data. The summary of them is as follows:—

The blood from various wild animals (forty-five in all, of which over forty were buffaloes and antelopes) was inoculated into dogs, which were kept outside of the infected areas (*i.e.*, on the Lebombo Hills).

The blood of eight buffaloes proved to be infective once; the blood of thirteen wildebeests four times; of four kudus, three times; of bushbuck, hyæna, reedbuck, and steenbuck, once. This demonstrates the connection of game, fly, and disease in stock.

Conclusions: (1) An animal proved immune to inoculation for *nagana*, but its blood proved virulent for susceptible cattle. (2) Game, which are considered immune against *nagana*, may convey the infection in their blood.

The animals selected for the experiments were taken from areas infested by tsetse fly. The parasites were few and far between, and it was only by long and patient searching that they could be found at all. In three cases only were they discovered by direct examination.

The above conclusions form a strong primary case against the game, so far as they go. Nevertheless there is a whole host of points bearing on the connection of fly, disease, and game, which yet await elucidation, and pending their solution, judgment should be suspended. Hasty legislation, based upon incomplete evidence, is dangerous, and its results may not only be irrevocable, but afterwards a cause for most bitter regret. For example, the student has yet to learn the exact life history and habits of the various *glossinæ* and other biting flies; which species precisely are acting as carriers of diseases; which species of mammals, birds, or reptiles act as hosts; how long, given immunity from the bite of, for instance, *glossina morsitans*, may such a host be capable of bearing within its system the trypanosomes, and, should it be proved that it does so until death, does the next generation, given continued immunity from fly, still harbour them? Can the insect exist indefinitely apart from these animals which admittedly are hosts, or, if not, for how long can it so exist? Perhaps not the least interesting question relates to the observed tendency of tsetse fly to be, to a great extent, tied to certain localities of a more or less uniform character; what is the factor or factors tending to restrict it within such limits? Although complete answers to the above questions still belong to the future, there has, from time to time, been a certain amount of controversy on certain points either synonymous with, or nearly related to them, which it may be not inapposite here to discuss, and those points are,—what led to the elimination of the tsetse fly over certain areas at various times, and especially subsequent to the rinderpest epidemic? Can game of certain species, admittedly hosts of *nagana*, be found apart from the fly? Is the existence of fly possible in the absence of these same groups of animals? And here let the writer interpolate

that he has little desire to enter the controversial arena, but rather to endeavour to array in some sort of order such facts bearing upon the questions, as may be within his knowledge, leaving to more capable hands the task of supplying the answers.

To begin with, the rinderpest, which ravaged the *bovidæ* of east, central and south Africa between the years 1889 and 1899, claims attention. The matter was touched upon in the second chapter; but, to recapitulate more fully, it was an epidemic disease so fatal to domestic cattle, and their near relations, the buffaloes, that wherever it had passed very few of either remained to tell the tale. The animals which suffered next severely were the tragelaphines—eland, kudu, and bushbuck—but reedbuck, duiker, and in fact all the horned ruminants having a large moist rhinarium, paid a heavy toll. Sable, roan, wildebeest, impala, and others possessing a partially hairy rhinarium, appear to have been much less, when at all, affected. Curiously enough, both warthogs and bushpigs died in large numbers from the disease, possibly in consequence of having battened upon the carcases of the dead animals.

The rinderpest, like many epidemics, pursued its course in a rather erratic manner. Here a range of mountains diverted it, there it swept down one bank of a river and left the other untouched. Sometimes a comparatively large area was entirely unvisited, while all the surrounding country was ravaged. The Barotse Valley, wherein many thousand head of cattle were located at the time of the visitation, was absolutely unaffected, though neighbouring areas were nearly denuded of stock. The disease progressed upon a broad front, and, having spread from Somaliland over east Africa, swept down the west side of Lake Nyasa, leaving the country between its eastern shore and the sea untouched, and stretched out its tentacles across northern Rhodesia to Portuguese Angola. South of the lake, it crossed the Zambezi at many points, and pursuing its southerly trend, decimated the game throughout southern Rhodesia, and the Portuguese territories lying south of that great waterway. The Limpopo and Olifants Rivers seemed to have temporarily checked its progress into the Transvaal eastern low country from the north; but, pursuing the main waggon roads from Rhodesia, it soon ravaged the northern and north-western areas of the then republic, and spread over the high veld, whence it was evidently introduced into the country bordering the Portuguese frontier by the oxen of the annual trekkers in the (south African) winter of 1896. It raged during all the middle and latter part of that year in what is now the game reserve,

but had expended its fury by the beginning of the following one. Not the least remarkable phenomenon resulting from the passage of this deadly epidemic was the total disappearance of tsetse fly from most of the areas which it had permeated south of the Zambezi. Attempts have been made to account for this, by stating that the insects died out, through certain zones, because, the game having disappeared, there was nothing further for them to prey upon. Facile as this explanation may be, it does not appear to be warranted by subsequent observation. So far from big game having been exterminated by the disease where it passed, it is well known that only the *bovinæ*, and those antelopes most closely approximating to them, were greatly affected, while many species were practically untouched. Impala, for instance, which were very numerous throughout the old fly areas in the eastern Transvaal, seem to have suffered hardly at all. Therefore the matter becomes reduced to a question of whether the fly died because of the practical extinction of the animals which suffered most from rinderpest—buffaloes, kudus, elands, and bushbucks.

The north-eastern Transvaal being a comparatively small area, and one moreover with which the present writer is well acquainted, would seem, under the circumstances, the most suitable locality wherein to seek, if possible, some key to the problem. All the four species abounded—say thirty years ago—throughout the greater part of this country, and there were at that time at least three distinct fly belts betwixt the Olifants River in the north and the Crocodile River in the south, an area of some one hundred and twenty miles by sixty. By 1896, however, uninterrupted and wholesale shooting by white hunters and natives, extending over a long term of years, had nearly exterminated the elands and had reduced the buffaloes to two herds; one of very small dimensions near the Olifants and the other, probably numbering less than one hundred individuals, in the Sabi Bush. Accounts vary in some degree as to the status of the fly at this time. It had certainly disappeared from, or become scarce in, some of its old haunts in spite of game, such as kudu, being still numerous therein; but seems to have been as thick as ever in others. It is generally agreed that in one area whence buffaloes had been exterminated for many years, it existed in considerable numbers right up to the advent, and during, at least, the early stages of the plague, that is to say, while the white hunters continued in the low country. The game was dying fast at the time when the dread of fever induced the usual abandonment of the area

by Europeans about October. When early in the following healthy season they once more arrived, it soon became apparent that the fly had disappeared; it had, in fact, done so nearly or entirely between October, 1896, and May, 1897, nor has it since the latter year again made its appearance.

A correspondent,[1] who knew the low country well in those days, writes on the subject as follows:—

"Previous to August, 1896, the present Sabi reserve was infested with fly, and in all that country buffalo were only to be found between the Sabi and Crocodile rivers, and about the junction of the Sand River with the Sabi. There were a few odd buffalo in the northern part.

"In June, 1896, there were lots of fly along the Sabi, but nothing like so many as in some previous years.

"One night in June, 1896, I was sitting up for lions just below Sabi Bridge when a kudu bull came down to the river to drink. As it did not come up again, I went at dawn to the river and found it lying dead just where it had been drinking—dead from rinderpest. Again, in December, 1896, I was down the Sabi River, and not a single tsetse fly was to be found, nor has one been seen since, to my knowledge. The fly had at the same time disappeared from the other fly belts, all country that the rinderpest had ravaged. I would like to mention that although no tsetse fly was found in December, 1896, its place seemed taken by a fly that "stuck" one quite as badly as the tsetse, and would, if left alone, fill itself out with blood. The fly was very similar in appearance to the ordinary dark-coloured 'blind fly' that 'sticks' one all along the bush veldcreeks at the present time, only the fly I noticed was about twice as large as the so-called 'blind fly.' Do you think that this fly had anything to do with the disappearance of the tsetse, or do you think the tsetse died of rinderpest? I have often seen them settle on dead meat that my boys were carrying, but whether they sucked from it or not I did not notice. Anyway, the fact remains that with the advent of the rinderpest the fly went out, and that within the short space of about four months."

The results of the epidemic as regards the game animals which we are now discussing were that the last of the elands had disappeared; the buffaloes were reduced to one herd of about twenty in the Sabi Bush, and the kudu had become greatly thinned down.

Now how far was this very rapid and complete extinction of the fly

[1] Mr. J. C. Ingle.

due to the reduction of the above animals? In the absence of any other destructive cause, the fact that even a few buffaloes, kudus and bush-bucks survived, supposing theirs to be the blood essential to the existence of tsetses, must surely have induced at least some partial survival of the insects, which, in the course of years, would have gradually increased with the increasing herds. The buffaloes had, for a long time, been so continuously hunted and persecuted that they had become accustomed to adhere very rigidly to the large extent of dense thorn bush, which coincided with the fly belts, and seldom, if ever, left it. The kudus were always found in the heart of the fly country, the environment most suitable to them. Seeing that the various tsetse-ridden zones in the Sabi district ran in more or less parallel directions, and at no great distance apart, it appears rather improbable that all the animals which outlived the rinderpest, or that even the surviving buffaloes, would have prolonged their absence from one or other for so long as to account for the death of all the flies from starvation, supposing this to be the logical outcome thereof. Sir David Bruce's experiments, however, have demonstrated that wildebeests and hyænas, animals which were immune from rinderpest, to a very great extent in the former and entirely in the latter case, and of which the Sabi Bush contained large numbers, are hosts of the *nagana* trypanosomes, and that consequently their blood must form food for the fly. It is therefore possible that where such animals exist, the latter need suffer no great inconvenience from the reduction, even from the extermination, of buffaloes and kudus, whether from shooting or from epidemic disease, and that other reasons to account for its very sudden disappearance at the time of the rinderpest must be sought. Whether, in fact, the fly ceased to exist from some entirely different cause, possibly in some mysterious way connected with the disease itself, must remain, for the present at least, a matter for speculation.

We have it on the authority of Sir Alfred Sharpe that in British Nyasaland the rinderpest made no difference whatever to the status of the fly. He says, ". . . I think they (the fly areas) have remained practically the same as they were many years ago . . . What are the precise conditions which are necessary for the existence of the fly it is impossible at present to say . . . some years they may be found in various localities within these districts, whereas in other years they may be found in other portions. Their presence also varies according to the season of the year."

In November, 1910, the Acting-Governor of British Nyasaland

stated in the Legislative Council that, whereas ten years or more ago, there was plenty of game, but no *glossina*, close to Zomba, now conditions were reversed. Game had been shot out in the course of years, but the fly had made its appearance and was increasing, irrespective of that fact.

It is undeniable that buffaloes and other large game can, and do, exist in zones which, although now containing no fly, are not only apparently suitable habitats for the insect, but were at one time favourite haunts. The Sabi Bush at the present day contains several considerable herds of buffalo, while kudus and bushbuck are present in very large numbers.

Conversely, *glossina morsitans* appears well able to exist unsustained by the blood of the larger mammals, as the following notes, taken by the writer when travelling through Portuguese Nyasaland in July and August, 1908, tend to demonstrate :—

"Tsetse fly was met with in two places: first in a small belt near the Mwagidi River not far from the coast, and secondly from the right bank of the Msalu to the right bank of the Lujenda River—a distance of about eighty miles as the crow flies. Throughout the latter area it was practically continuous, and, though it was the coolest season of the year, was extremely troublesome. Specimens were brought away from each belt, and were subsequently identified as *g. morsitans*. The fly areas were thinly populated, and the natives kept no stock beyond a few anæmic-looking goats. Contrary to the general assumption that *g. morsitans* is entirely dependent upon the blood of the larger mammals for its sustenance, game along our route through the fly areas of Portuguese Nyasaland was, rather to our surprise, a negligible quantity. Being the driest time of the year, and the Msalu and Lujenda, both of them perennial streams, somewhere in their vicinity, if anywhere, indications of animals might reasonably have been expected. But although Mr. Maugham —an experienced hunter—and myself, having a large number of carriers to feed, hunted in all the most likely spots on every possible occasion, we were entirely unsuccessful in finding even old game tracks. Native information indicated that game never had been very numerous in these forests, and in view of the fact that at least every second adult native whom we met, and many a small boy also, was in possession of a firearm of some kind, there appeared no particular reason for doubting their statement that they had shot out most of such game as had existed in that part of the country long before. The general rankness and coarseness of the

herbage lent colour also to their story of game never having been very abundant. Tsetse fly, the natives added, was as it had been since they could remember. Certainly the swarms which we encountered must have been hard pressed by hunger if forced to exist only upon the blood of the few wandering herds, which may have then constituted the game of the district.

"As soon as we had crossed the Lujenda, a wide and deep river, we got quite out of touch with the fly. The land gradually rose to the base of the Nyasa Mountains, and tracks of elephant, buffalo, and hartebeest were noticed. Elephants were said to be plentiful to the north-east."

Mr. R. C. F. Maugham, H.B.M.'s Consul at Lourenço Marques, with whom the writer travelled, can endorse this narrative of our experiences, and fully agrees that, within the above area at least *g. morsitans* appeared to exist to a great extent independently of the blood of large four-footed mammals.

Again, speaking of, I think, the Lomagundi and Hartley districts of southern Rhodesia, one of a deputation of the Society for the Protection of the Fauna of the Empire informed the Secretary of State for the Colonies that while travelling there in July, 1908, he was told by the hunters whom he met that the only portion of the area permeated by tsetse fly was towards the east, but that they never went there as there was no game.

Although, for reasons not yet fully explained, *glossinæ* at times change, extend, and contract their zones, generally speaking, all species are extremely local, and are never found permanently out of a definite environment. The disappearance of tsetse from certain districts, subsequent to the thinning out of the local buffaloes, may perhaps at first sight appear to offer a satisfactory proof of its dependence upon these animals, but can hardly be accepted as a final argument, in view of the uncertainty as to whether there may not have existed other contributory causes. It is quite possible, for instance, that climatic conditions, or some parasitic enemy, may have been responsible in the past for the decrease of fly within certain areas at the times when various observers made their notes on its apparent disappearance or reduction in numbers. Locusts, it is agreed, periodically disappear over huge areas from natural causes, and the fluctuation of "hippo flies" (*tabanidæ*) in different localities, and from year to year is often very marked.

It seems that from 1874 onwards there was a gradual but perceptible reduction in the numbers of tsetse flies along the south

bank of the Chobi River, and in 1899 Mr. Percy Reid informed Mr. Selous that he did not encounter any at all. This was three years after the rinderpest. It is quite in keeping with experiences in the Transvaal, north-western Rhodesia, and elsewhere, that the fly should have vanished entirely from areas ravaged by the epidemic, and for long afterwards have confined itself to relatively small local patches, possibly missed by the disease.

Now in the case of the Chobi, the strange thing is that for the last few years the tsetse fly has been steadily increasing and spreading through its old haunts on the south bank. At the present time, according to the statement of the resident magistrate of the district, who lives nearly at the junction of the Chobi and Zambezi Rivers, there is a very considerable area infested by the insect to the west of his station. Buffalo have been for many years completely exterminated from all that part of the country, and the amount of large game within the fly areas, is, my informant says, probably less than that outside of them. He told me he thought the fly had spread from an island in the Chobi, but I did not gather how far he had personally investigated the matter of its source. For its reported total absence from the locality in 1899, there is only the recorded observation of a passing traveller during the cold season of the year. It is, at any rate, apparently quite clear that after a gradual decrease, lasting through many years, and culminating in extinction from all but one spot, the fly in the Chobi district is once more present in considerable numbers, notwithstanding that the buffaloes and other game, whereon it was formerly assumed to depend, have either long since vanished, or exist in much reduced numbers. It is also noticeable that the fly has spread to the south bank, irrespective of there being no buffaloes there, and has not been, report says, tempted to the north bank in spite of the fact that a game reserve which contains buffaloes, is now maintained there by the German authorities.

The idea of the absolute interdependence of tsetse fly of any and every species, and "big game," that is to say the larger and consequently more obvious members of the ungulate order, has become so deeply ingrained in the public mind as to have become almost an article of faith. The fact that *glossina morsitans*, *glossina pallidipes*, and probably every other species of the tsetse fly will suck the blood of most living things found in their respective areas, is lightly passed over. Outside scientific circles the discovery of trypanosomes in the blood of a hyæna, and all that is implied thereby, is imperfectly, if at all known. It is a discovery, however,

Big Game at Home.

Kudu Calf, five days old.

which points to the distinct possibility of all wild carnivorous mammals down to the smallest being concerned in the spread of *trypanosomiasis*, and if that is so, why not many other mammals? Baboons and monkeys, hares, and many other smaller creatures, even such as are not wholly or partially diurnal in habit, spend their days above ground. Lemurs and bats are found amongst the trees and bushes. We may therefore, supposing no other means be found, have to face the task of getting rid of a very large proportion of the great and small mammals of Africa, not a very easy problem it will be admitted. But the matter does not end there. There are very many other trypanosomes besides those of *nagana*, and fresh ones are being continually discovered. Some of these exist in the blood of birds, of reptiles, and of batrachians. In the Bulletin of Entomological Research, for October, 1910, it is stated:—"It has been proved by experiment that cattle may act as a reservoir for the virus of sleeping sickness, and that healthy animals may be infected from them by means of *glossina palpalis*. It has been proved that cattle in a fly area do naturally harbour *trypanosoma gambiense*."

The trypanosomes of *dimorphon* are believed to be spread by the agency of "hippo" and horse flies (*tabanus* and *stomoxys*), and cattle seem to be affected in places where at least no *large* wild animals of any kind are present.

In deference to popular sentiment, "drives" of game on an extensive scale have occasionally been carried out in various parts of Rhodesia and in Zululand, the object being to clear the vicinity of certain transport roads of wild animals of the larger kinds, and consequently of tsetse fly. The attempt to clear any strip of country of game by such means must always end in failure. Wild animals are all more or less migratory in habit, and the area is soon likely to be again stocked with others. Therefore "drives" of this kind result merely in useless and wholesale slaughter, which can be defended upon no possible grounds whatever. I think this has been realised at least by the Natal Government, for the Zululand experiment, which was spread over several years, though it resulted in the reduction and temporary driving away of the game from certain areas, appears in no way to have affected the tsetse fly.

Little has been done to clear strips or areas from bush, with a view of driving away *g. morsitans*. The experiment has answered well with *g. palpalis*, but, with the exception of one, apparently

not very extended trial in German East Africa, all measures advocated or given effect to for the reduction of fly-borne stock diseases, have been destructive ones against the larger game animals. And yet, amid the present chaos, the one thing which stands out clearly, is that tsetse fly, no matter of what species, seldom goes far from covert of some kind. Whatever the description of vegetation preferred, all unite in liking shade.

Dr. John L. Todd, Professor of Parasitology at Montreal, writes in the *Field* newspaper:—

"Everybody knows that tsetse-fly disease is due to a parasite—a trypanosome—which is transmitted from infected to healthy animals by the bite of a fly, usually a tsetse fly. It has been abundantly proved that the tsetse flies are not dependent for the blood by which they live, upon large mammals alone; they will feed upon almost any living thing, whether warm or cold-blooded. The destruction of the game, therefore, will have practically no harmful influence upon the flies themselves; it will benefit cattle-raising solely by depriving the fly of one focus from which it draws infection. . . . Even although the large game was entirely exterminated, every source of possible infection by no means would be eliminated, for many small quadrupeds, such as mice, rats, mungooses, etc., have been shown to be susceptible to the trypanosomes in laboratories. It is thus extremely probable that they may become naturally infected. . . . To be consistent, if wild game is to be destroyed, the small animals must also be exterminated, and all infected cattle in a herd must be slaughtered. It is here the difficulty lies. It is often practically impossible to determine just what cattle are infected. . . . Observation and research have shown that through clearing the bush from an area it may be to some extent freed from tsetse. Research work on the trypanosomiases of animals is still being vigorously prosecuted by institutions interested in tropical medicine, of many different nationalities. The ultimate success of their work may be awaited with some degree of confidence; in the meantime, governments and individuals alike should afford them every support in their studies, both by extending facilities to them, and by following authoritative recommendations which they may make."

A most interesting article from the pen of Mr. C. W. Howard, head of the Government Entomological Bureau at Lourenço Marques, recently appeared in the *Delagoa Bay Gazette*. Mr. Howard, being a scientific investigator who has been for some years engaged in

work bearing on the subject of fly-carried diseases in the Moçambique Province, cannot be accused of being a partisan His observations upon tsetse fly and game will be found reproduced in the Appendix.

Professor Austen's monograph on tsetse flies should be read by all who are interested in this subject.

The whole question is a most complicated one, in view of the diametrically opposed views of so many observers, and it is obvious that it can be settled satisfactorily only by scientific investigation and experiment.

The relation between game and tick-borne diseases fatal to stock is another question that requires settlement.

A great deal of the game country throughout Africa swarms with grass ticks at certain seasons of the year, and though, in many areas, it is exceptional to find many adhering to members of the *bovidæ* family while in good condition, in others the reverse is the case, though to no herbivorous animals are the insects found clinging in such enormous numbers as they are sometimes to the various carnivora. No doubt, speaking generally, game as a whole furnishes a reservoir for ticks of various kinds. There are some five or six diseases which affect stock in south Africa, at present known to be transmitted by the piroplasms of which various species of ticks form the hosts. Of these the two most important are biliary fever, which attacks equines, and in varying degree other animals, but is only occasionally fatal; and secondly, east coast fever, a most virulent endemic disease which has destroyed, and is still destroying large numbers of cattle in Africa. Writing of this latter, Dr. Arnold Theiller, C.M.G., the eminent Bacteriological expert, says:—

"It has been proved that in east coast fever, a tick, after it has once bitten an animal, can no longer transmit the disease. It must be emphasized here that the popular opinion that ticks pass from one animal to another, and communicate the disease in this way, is wrong. The destiny of the female is to lay eggs, and that of engorged larvæ and nymphæ to moult, and this makes it impossible for them to reach new hosts before they have reached the next stage in their life history; therefore, only males can pass from animal to animal and transmit the disease in this way. Indeed, males of ticks can live for many months on a host, but their peculiarity is to remain on that host, which they only leave accidentally, when they are rubbed off, and since experiments have

proved that once they have bitten they become harmless, such an accidental change of host does not come into consideration in the propagation of the disease, at least in east coast fever."

Now, as game, like all domestic animals except cattle, appears to be immune from this disease, it therefore follows from the above, that an infected tick in any of its stages, by biting a wild animal, thereby frees itself from the disease, and is thenceforth innocuous. Thus, so far from being dangerous factors in the spread of east coast fever, game are, in all probability, direct cleansing agents, and, equally with sheep, goats or horses, may perform useful work in clearing a ground, whereon diseased cattle have been pastured, of the infected ticks.

In the case of biliary fever, if game are hosts thereof, so equally are many of the indigenous domestic animals of a country. Dr. Theiller writes of this matter:—

"When we say that biliary fever affects equines, we must make a reservation in stating that the south African animal—born and bred in the veld—when grown up, is not liable to suffer from the disease, it only does so under special conditions. The chief sufferer is the animal bred in the stable of a town, or imported from oversea, say from England or America, where the disease is unknown. We must remember, therefore, that the animal born in the veld is immune. . . . An animal which has recovered from this disease retains the affection in its blood, and probably if remaining exposed in the veld remains an infectious agent to the end of its life."

From the foregoing, therefore, it seems evident that no stronger case can be made out against game in regard to biliary fever than in the case of the east coast disease, for in order to protect absolutely the relatively few town-bred and imported animals from it, it would be necessary to kill off not only all the wild animals, but the greater part of the domestic ones also.

The clamour, indeed, for legislation involving the wholesale destruction of game, on the pretext that it is a standing menace to the existence of stock, is in great measure, if not wholly, an artificial one, based, it must be feared, a good deal upon mere lust of slaughter, coupled with the appreciation of the pecuniary value of the animals themselves. "The pioneers of civilisation are generally pushing, forceful men, with strongly developed individualism, not always very far-sighted, but unscrupulous in sweeping out of their path all apparent obstacles to immediate success, as well as determined to turn to their advantage all the assets

of the new country, so far as in their power lies." Obviously the wild fauna of the latter is one of the first things that tempts exploitation.

To sum up, until science has thoroughly probed the whole nature of the insect-borne diseases, it seems only just that local administrations should enact no hasty legislation, nor approve of any wholesale destruction of game upon grounds of mere supposition. *Festina lente.*

CHAPTER V

THE ELEPHANT: RHINOCEROSES: ZEBRAS

THE Elephant (*elephas africanus*).—Whether the African elephant will ever attain the useful position in the economy of labour occupied by his Asiatic cousin, appears at present doubtful. It cannot be said that any very extensive trials of his usefulness as a servant of man have, up to now, been made, and, indeed, it is only within the last few years, that he has excited any interest at all, beyond that which he rouses as a provider of ivory for the market, and sport for the hunter.

Since African game preservation has assumed practical shape, however, the elephant has received his share of attention—in common with the zebra, and the eland—as a potential domestic animal, and it has been felt that in view of his rapid decrease all over the continent, any proposed experiments should not be too long delayed. The authorities of the Congo Free State were the first to carry their ideas into practice, and for the last five or six years a station for the capture and domestication of elephants has been established at Agri on the River Welle. A considerable number of young animals are now used for station work at this place, carrying bricks, dragging timber, and so on. Captain Rinquet, the late commandant at Lado, was kind enough to show the writer, when there in 1909, some interesting photographs taken of these animals. The experiment is extremely interesting, and one which it may be hoped will not only invite imitation elsewhere, but will itself be persevered with through the number of years necessary for a reliable judgment to be formed as to its ultimate utility. The animals are at present young, and therefore perhaps amenable to control in a degree which may not be possible when they have attained maturer age; but if all difficulties are finally overcome, transport in the remoter parts of Africa may receive substantial aid, and another argument for the preservation of this grand species from extinction will exist.

Mr. Sclater, as a result of his very long experience of both African and Indian elephants in the London Zoological Gardens, is emphatically of the opinion that both are equally tractable. He writes:—

"Since 1865 there have been African as well as Indian elephants in the Society's menagerie. Both have been treated alike and both, it may be said, are equally intelligent and tractable. All elephants on attaining adult age are liable to fits of temper, and to become dangerous, but this occurs in Indian as well as in African species."

The argument has often been advanced in favour of the domestication of African elephants, that in classic times, the Carthaginians, the other Mediterranean powers, used them in warfare. Whether this was the case, or whether Asiatic elephants, imported or home bred, are referred to by the ancient writers seems uncertain. The theory has sometimes been held that an indigenous race of elephants akin to one or other, may have existed in north Africa in the past, but this has so far been unsupported by the discovery of any remains. The impressions of elephants upon Roman coins appear, by the shape of the head and body, and allowing a margin for inaccuracy to the designer, to indicate the Indian animal: but the writer Appian states that "the Carthaginians, fearing an invasion by Scipio, collected and trained numbers of elephants in a short time." This could not have been possible if they had to be sought at a great distance.

It is undeniable that there are many apparent obstacles in the way of domestication. Owing to the shape of his body, which slopes considerably towards the tail, the fashioning of a howdah for the African elephant must necessarily present greater difficulties than that of one for the Indian animal; nor is it at all certain that the negro will make a reliable and efficient mahout, being, generally speaking, endowed with no natural love for, nor sympathy with, any of the lower animals. A still more serious objection is based on economic grounds. The Ethiopian region supplies, to the square mile, as compared with India, but a limited amount of food suitable for the animals. Elephants consume daily an immense quantity of fodder, and in consequence there must be an unlimited quantity close at hand to satisfy the wants of beasts working in one place. Some years ago the Indian Government was approached with a view to obtaining information as to what would be the probable cost of catching and domesticating thirty wild African elephants per annum. It was estimated that for this purpose ten trained animals, with their attendants, would have to be imported from India, and that the total cost for the first year, including purchase price of trained elephants, expenses of attendants, gear and equipment, and food of trained and captured beasts, would come to roughly 70,000 rupees, or about

£4,660. A little later (1903), Col. Delmé-Radcliffe furnished a report on the capturing of wild elephants, the gist of which was as follows:—

"Elephants in Africa move too far and too fast to allow of the ordinary deliberate preparations for a kheddah. The forests are very extensive, and it might be difficult to collect enough natives for the difficult drives required.

"African natives could not be relied upon to have sufficient patience to stick to the kheddah work.

"African elephants would be very difficult and dangerous to drive about. Indian elephants being smaller, less heavily armed, and slower in pace than African ones, would probably be unable to control them.

"In India, a first-class elephant receives about 860 lbs. of sugar cane, and 60 lbs. of flour chappaties as a single day's ration. African elephants, being bigger, would require more.

"A competent staff is absolutely necessary.

"The beasts if successfully trained, might be used for carrying field guns, or for hiring out to shooting parties.

"They cannot compare with carts or even porters for transport work where roads exist; where there are no proper roads, they might not be able to carry heavy loads through the swamps and rivers, and would break down the extemporised bridges found in wild countries.

"An elephant eats over 900 lbs. of food a day and will carry 12 cwt., that is to say, the loads of twenty-four porters, who in the same period require altogether only 48 lbs. of food.

"Loaded elephants do not travel faster than the ordinary porter marches. Porters are usually reckoned the least economical form of transport. How much more extravagant, then, would elephants be?

"Elephants require a great deal of water, and many of the caravan routes are very deficient in this, for a good part of the year.

"It would be sheer waste of money to attempt elephant training without a staff of trained men, who would require high pay."

There is certainly no doubt that there are few if any places in Africa where tame elephants could be shackled and turned out to feed as is done in Asia: in the dry season especially, the labour of collecting food, to say nothing of the expense, would be very great. The nutriment adequate to keep them in good condition in a natural state, would probably not suffice when the animals were doing hard work. Thus there are grave difficulties to be overcome before this great beast's strength can be made available as an adjunct to labour in Africa: but they are probably not insoluble, and given the necessity,

induced by some great shortage of native labour or other causes, could no doubt be surmounted. In the meantime, although there does not appear any urgent demand for forms of transport other than are being generally used, it is to be hoped that elephants may go on receiving the partial protection lately accorded to them, as forming a possible economic asset, apart from the value of their ivory, at some future date.

The ivory trade itself, the cause of the enormous destruction of these animals in the past, furnishes good reason why they should not be allowed to be greatly reduced below their present numbers. In former days, the whole continent must have swarmed with elephants; otherwise, taking into consideration the slowness with which they increase, and the huge ivory trade which has so long existed, they could not have survived to the extent they have done. For a long time after the natives discovered its commercial value, the ivory which was found all over central Africa, as the result of natural demise, was sufficient for trading purposes; but at the present day, these caches have mostly become exhausted, and the living animal alone remains to satisfy the demands of barter. Omitting the wholesale destruction in south Africa during the last century, which resulted in the virtual extermination of the animals, within the last ten years the numbers killed throughout the continent would, if summed up, present a surprising total. A few instances will suffice. In 1898 and 1899, two sportsmen are known to have shot elephants producing four tons of ivory, between Mobai and Bangue; thirty-six tons were seen in a store at Ibenge, collected between that place and Yakoma, the local price being 1 franc per kilo! About the same time one sporting party paid £800 duty on tusks of ivory killed or acquired near Lake Rudolf. The destruction of female and immature animals was also very serious, and, without doubt, much of the total weight annually traded, was made up of their small tusks. At the end of 1902, immature ivory was sold in German East Africa to the value of 17,700 rupees, which corresponded perhaps to the tusks of between 1,300 and 1,400 young elephants, collected during the two or three years within which prohibitory legislation had been in force (Herr Gotzen's report). No doubt before the killing of such animals was forbidden, the numbers destroyed were still greater. Since 1900, elephant hunting has been everywhere restricted by regulations, and the killing of females, and of males carrying tusks under a certain weight, has been altogether forbidden. Nevertheless very large numbers are still slain in out of the way districts, where control is impracticable. It is believed that

at the present moment a large illicit trade goes on through Abyssinia and possibly parts of Somaliland, in ivory obtained from animals killed in British territory. About four years ago (1907), it became generally known that the Lado Enclave, at that time under Belgian jurisdiction, swarmed with elephants. Thither, accordingly, flocked profit hunters from all parts of Europe and Africa without right or licence, but considering the venture well worth the risk. It is impossible to determine how many elephants fell, but the number must certainly, judging by the immense quantities of ivory which paid transit dues through British territory, have run into thousands. In the year ending March, 1908, £15,820 worth of ivory was exported from British East Africa, £61,497 from Uganda; while the same period saw 539 tons or £560,552 worth of ivory imported into the United Kingdom, which means, allowing each elephant to carry 100 lbs. of ivory, that over 12,000 were accounted for in that year. But as it is probable that a very large proportion did not carry tusks of anything like that weight, the total was most likely much larger, perhaps double. There was also an increase of 932 cwt. of imported ivory above the imports for 1907, in spite of the fact that the total of elephants was smaller. In parts of Africa where natives are in possession of firearms, they kill large numbers of the beasts, and a great deal of this ivory goes to Zanzibar, to which place over 85,000 lbs. were imported in 1907.

In 1908, in consequence of reported destruction to native crops by the local elephants, the government of southern Rhodesia suspended their protection in the Lomagundi district. Soon many profit hunters were on the spot. Owing to long-continued immunity from attack the herd had become very tame, and eighty-one of them were killed by one party alone. The newspaper account of the proceedings is as follows:—

"The most successful day resulted in the shooting of twenty full-grown elephants and the capture of two calves. Mr. Viljoen and two companions had started out in the morning on spoor found overnight, and soon reached a small stretch of open country four hundred yards in extent. Here they saw twenty elephants quietly feeding, two of the cows having fair-sized calves. The capture of the youngsters was the first thought, and this meant the slaying of the rest of the herd. The two cows were standing apart from the rest, and Viljoen, getting as close as he dare, got in two shots killing both." The account then describes the slaughter of the other eighteen elephants in sickening detail. The young ones captured subsequently

died. Although it was without doubt necessary to protect the natives from the depredations of the elephants, it is quite obvious that this need not have entailed the extermination which actually took place. As Mr. Selous pointed out in a letter to the *Field*, the shooting of one or two of the leaders would, in all probability, have had the desired effect, and frightened the others away. In any case, where necessary destruction of this sort has to be carried out, it is best left in the hands of competent and responsible officials who have no private gain to derive; and indisputably the dead animals should be considered to be the property of the government, and the ivory sold for the benefit of the public exchequer. To admit private enterprise into such matters can only be regarded as lamentable.

The elephant takes many years to come to maturity, the breeding rate is extremely slow, and consequently when the stock has been thinned down, it has not the same chance of recovery as have other and more prolific species.

In the more efficiently administered areas, although females and immature animals are protected, warrantable bulls are shot under licences, by sportsmen and officials, and this is now beginning to result, in many places, in a scarcity of such animals. However, it seems to be generally agreed that the best tuskers are not found with the herds, and that, at least in Uganda and on the Nile, herd bulls are seldom found with tusks weighing more than 40 or 50 lbs. each.

At the present day elephants are found in the Knysna and Addo Bush in Cape Colony, where they have been very little disturbed for many years, and, having to some extent lost their fear of man through long immunity, are on occasions extremely troublesome. There are possibly a few in the northern part of Zululand, and, in Portuguese East Africa, from the Maputa to the Limpopo River, they are sparsely distributed along the Swaziland and Transvaal borders. There is a small herd in the north-eastern Transvaal, acquired since the institution of the game reserve there. In the country between Beira and the Zambezi there are still a good number left, but few, apparently, carrying ivory of any great size. In southern Rhodesia yet remain some good herds which have survived recent legislation. In north-western and north-eastern Rhodesia, British and Portuguese Nyasaland, and Moçambique, elephants are still found in considerable numbers, as also through parts of German and British East Africa. Uganda has long been famous for the fine ivory carried by its elephants, which are numerous through a great part of the

country, and right across from the Lake Rudolph district to the Nile, being plentiful in the southern Sudan. Probably, however, the Congo is now *par excellence* the home of these animals, and in some portions of it they unquestionably exist in immense numbers. The west coast territories are also said to be, some of them, still fairly well stocked, and most of the shooting is there done by natives armed with trade guns.

Elephants present a curious mixture of timidity and aggressiveness. Though the slightest odour of human beings is sometimes sufficient to scare them away from the neighbourhood, and cause them to travel many miles, on the other hand they will on occasion, and unlike most other animals, attack in an entirely unprovoked manner. Stories are current of the Knysna and Addo Bush elephants occasionally chasing wayfarers, scattering working parties, and so on. At Gondokoro in the Nile Province of Uganda, exists a herd of several hundred animals, composed entirely of cows and immature animals, which have become such a terror to wayfarers, that the post road from the Kit River is shunned as much as possible by native travellers. Gondokoro was, until a few years ago, a military station, and at that time the herd was continually receiving the attentions of sportsmen, until all the bulls carrying ivory of any size had been shot out. Although for some time past almost entirely left alone, they still seem to cherish the memory of former grievances, and instead of running away on the approach of human beings, usually adopt precisely the opposite course. Half a day's march north, at Lake Birika, the local elephants show an entirely different disposition, and betray no signs of truculence. It seems to be agreed, that as a rule, cows and young bulls are more aggressive and vindictive than are the large males. Sportsmen getting into a herd of elephants have often more to fear from animals standing concealed, which charge down upon them from unexpected directions, than from their intended quarry. A young officer lost his life in Nyasaland two or three years ago in this manner, and instances of unprovoked attacks are constantly occurring all over Africa, sometimes with successful, at others, with fatal issue to the hunter. My friend, Mr. Neergaard, while following a fresh track in Moçambique last year, was viciously charged from close quarters by an elephant which he had not molested, and before indeed he had so much as caught a glimpse of the animals which he was following. On this occasion only the coolness of his shooting and a heavy rifle saved his life.

It is probable that, under modern conditions, elephant hunting is a

more dangerous pursuit than formerly. The small bores which are often used have not the stopping power of the old heavy rifles; but the chief difference lies in the fact that whereas the sportsman of the past was free of the herd, he of the present day is restricted both as regards numbers, and in that he may not shoot an unwarrantable beast. He must therefore, when the covert is dense, often go right among the animals to look for a big bull, and this is a proceeding fraught with considerable risk.

The habits of elephants, and methods of hunting them, have been so exhaustively discussed by so many competent writers that there is little or nothing to be added to what has already been written. They are not naturally strictly forest-loving animals, but, as occurs with so many other species, continued persecution tends to make them more and more seek the shelter and protection of thick covert, and until very recently the herd in the Transvaal game reserve never ventured, even at night, beyond the shelter of a certain large area of very dense bush, which had for many years proved their only safe refuge. The tread of the elephant is astonishingly light; also, until actual experience has been gained, it is difficult to believe that it can be possible to approach so very close, in forest or bush, to so huge an animal without seeing it. On one occasion, hearing some shots near the road, the writer left the path to investigate their cause; he was preceded by a native, who presently ran into, almost to the point of touching, a cow elephant, standing under a tree; the wind was of course blowing from her, and she had no idea of human presence. Although at the moment we did not anticipate seeing elephants, and were pressing on with another object, it was still remarkable how the beast seemed, as it were, to loom up only when we were close upon it. Elephants are good swimmers, and rough or hilly country offers no impediment to their movements. They feed principally during the night or early morning, standing about in shady places in the heat of the day, although when used to being much disturbed, they often keep moving slowly on all day, with only occasional short halts. In hot weather they drink every night; when it is cooler less often, and their arrival at the water is usually between nightfall and midnight. Their sight is very poor, but whether their hearing is also, in reality, indifferent, or whether the rumbling noises which every individual in the herd is continually making render them callous to other sounds, seems uncertain. Their scent is extremely acute, and the flexible trunk is waved to and fro to catch the slightest whiff of tainted air. There do not

appear to be any records of African elephants having bred in captivity, but the period of gestation of the Indian animal is about twenty-one months. The most experienced hunters favour the head shot, which is taken in a straight line between the eye and the ear, and just in front of the latter; this, if at the right angle, kills the animal stone dead. In old days the Boer mounted hunters used to practice what was known to them as "knee haltering": that is to say, the first shot was directed at the animal's knee or leg: an elephant when his leg is broken, or the bone badly injured, is unable to move at all, and so the horsemen were enabled to go on after the rest of the herd, and finish off the maimed animals when the chase was over.

The pursuit of the elephant is perhaps the most exciting and attractive of all forms of big game hunting in Africa; certain it is that to most men who have tasted this form of sport, all others become insipid by comparison. Those thrilling moments which the hunter spends after he has come up with the herd in thick bush or long grass, and is peering about for the big bull which he knows is there, every nerve strung to highest tension, and the great forms only partially revealed through the thick covert as they stand or slowly move within but a few yards of him, form a memory which time may not easily efface. The protection now extended to the breeding stock of elephants inspires the hope that this magnificent form of sport may long be enjoyed in due moderation by those to whom mere profit is not the main object.

Rhinoceroses

The White Rhinoceros (*rhinoceros simus*).—The English name for this, the largest of all African land mammals after the elephant, is deceptive, there being in colour very little difference between it and the more widely distributed bicornis.

"The head is very long and massive; upper lip straight all round, with no trace of a proboscis; nostrils are elongated slits parallel to the mouth; ears longer and more pointed than in the other species, springing from a closed cylinder about three inches long; tail as in the black variety, but only the last quarter provided with wiry bristles. The anterior horn is situate on the nasal bones, longer and more slender than in the other species, curved gently backwards, and the upper part of the front usually flattened by friction against the ground; the posterior horn is usually short, straight, conical,

White Rhinoceros (*R. simus*), Zululand.

and somewhat laterally flattened. Both horns vary a good deal in length and shape." (Schlater.)

This splendid beast which attains a height of over 6 feet 6 inches, at the shoulder, was once extremely plentiful in many parts of south Africa, between the Orange River and the Zambezi; but is now probably entirely extinct south of the latter river, with the exception of some fifteen preserved in Zululand.[1] Two of these were killed by natives in 1902, but, with this exception, they have been unmolested for a good many years. Until 1900 it was believed that the species did not exist north of the Zambezi, but in that year Major Gibbons, at the conclusion of his march from the Barotse country, and while awaiting a steamer to take him down the Nile, shot a rhinoceros in the Lado Enclave, which he at once recognised as *r. simus*. It is now known that the species is probably quite as numerous in the Enclave, the north-eastern Congo, and the southern part of the Sudan west of the Nile, as it was in former days in any part of its south African range, and the fact of its presence being for so long unsuspected is the more remarkable, when it is remembered that such a keen zoologist as Sir Samuel Baker[2] spent so long in this very region, and that Emin Pasha, also a zealous naturalist, albeit not a sportsman, was for years at Lado, Rejaf, and Wadelai, round all of which places the animals are very numerous. At a later period, when the tide of Mahdism was ebbing from the Upper Nile, and European officers and travellers shot many rhinoceroses along its banks, no one seems to have noticed any difference between the ordinary black rhinoceros found on the east bank and the totally different animal across the river.

The Nile has evidently proved as impassable a barrier to the progress of the square-mouthed rhinoceros from remote times, as to that of his cousin the prehensile-lipped animal, whose range extends all along the east bank. The nature of the country to east and west is alike in every way, but, though only a few hundred yards of water separate the two species, each is exclusively confined to its own side.

Mr. Selous' minute account of the habits of the white rhinoceros in south Africa no doubt applies equally to those of his brother on the west bank of the Nile. He is a sluggish and lethargic animal by

[1] I heard, quite lately, that one or two had been seen in southern Rhodesia.

[2] Baker had a suspicion of its existence in east central Africa aroused in his mind by a single horn which was brought to him; but he never located the species.

nature, and betrays none of the irritability so characteristic of *r. bicornis*. He seldom charges, and his unsuspicious habits have been the cause of his falling a ready victim to the hunter, both European and native. He is probably entirely a grass-eater, feeding in the late evening, through the night and in the early morning. He moves steadily along at a slow walk all the time he is grazing, not remaining more or less in one place to do so, as is the habit of many animals; on the sun getting hot he lies down under some convenient tree or bush to sleep soundly through the warmer hours of the day; he is then very easy to approach. Sight and hearing both appear rather deficient, but scent is keen. When on the move the head is carried so low that the horn is almost parallel to the ground. The calf precedes instead of following the mother, and is guided by a gentle pressure of her horn on its rump. The droppings are deposited in the same spot, after the manner of the other species. White rhinoceroses are seldom found at any great distance from water. They are believed to be very numerous indeed to the west of the Nile, practically from Lake Albert to some distance north of Lado, and have not, so far as can be ascertained up to the present time, been reduced in numbers to any appreciable extent. This is due to the fact that the numerous hunters who recently were busy in their haunts pursued the elephant alone, a chase which precludes thought of all else. It is therefore to be hoped that when access to these remote regions becomes less difficult, government will take effectual steps to guard these inoffensive and interesting creatures, in this, their last known refuge, from the fate which has overtaken them in south Africa.

The Black or Prehensile-lipped Rhinoceros (*rhinoceros bicornis*).—Unlike his so-called "white" cousin, the black rhinoceros has a range embracing, where he has not been exterminated through human agency, nearly the whole of Africa. In colour he is not noticeably darker than the other species; the height is much less, only about 5 feet at the shoulder; the skull is more abbreviated, and the horns, of which the anterior usually, though not always, exceeds the other, are shorter and more massive. In all rhinoceroses these horns are a mass of closely and vertically-packed fibres growing from the skin, and with the slightly hollowed base resting upon a small prominence upon the bone of the skull, whence it can easily be detached; the feet are provided each with three broad nail-like hoofs, so that the track is always an unmistakable one.

Formerly it was considered justifiable to split up the black

rhinoceros into several species, according to the relative lengths of the two horns; but it is now known that these variations are merely individual eccentricities, and that there is but one species throughout Africa.

At the present day this animal is almost extinct in the Union of South Africa. A few still exist in the north-eastern Transvaal, the dense bush which extends on both sides of the Portuguese border, between the Singwitsi River and the Limpopo, and also in the Sabi Bush, on the south bank of that river, where for many years one only was believed to exist, so closely had fear of man induced the animals to remain within the shelter of the thick wait-a-bit thorns. Actually there may be a dozen or more present in the two districts, which, so far as the British side is concerned, are within a game reserve; but this small number holds out little hope of ultimate survival without the aid of fresh blood. The presence of a considerable number of rhinoceroses at no great distance in Portuguese territory, however, encourages the hope that recruiting may be possible, if indeed it has not already taken place. On the Maputa River between Bella Vista and the Pongola junction, the road passes through a large extent of very thick bush or forest, and here rhinos, which have been for a good many years strictly preserved by the Portuguese authorities, are pretty numerous, and are reported to inspire a good deal of terror in the natives who travel by that route, though it is not added that any one has ever been actually attacked. They have been increasing of late years in northern Zululand, thanks to protection. In southern Rhodesia, where they were once so widely spread, they are now confined to a few districts; but a good many still exist in the Zambezi Company's Territories north of Beira. North and west of the Zambezi the species is sparingly distributed through parts of Northern Rhodesia, Nyasaland, Angola, and Moçambique, becomes more numerous towards the north, and until quite lately was found in great numbers over most of British East Africa, wherever the country was high and dry. The fact of their favouring the open, treeless plains, and so catching the eye of the man with a gun on every occasion, soon, however, thinned their numbers, while their unpleasant habit, when alarmed, of dashing through caravans, to the great detriment of camp equipment, and terror of porters, led to their being considered a nuisance. The range of the species further extends to Somaliland, and the southern Sudan, as far as the east bank of the White Nile, in the close vicinity of which, however, they are not met with in any great numbers.

Unlike the other species, *r. bicornis* is essentially a browser. Leaves, twigs, and small roots form his food. To the casual observer the fact that he favours so greatly the treeless plains of parts of east Africa might point to a diet of grass; but a closer examination of the ground reveals the presence of a small plant, which has in reality formed the attraction. The long prehensile upper lip is admirably formed for browsing, and his droppings, which are deposited in heaps, and afterwards kicked about by the hind legs, clearly indicate, by the broken sticks and crushed leaves which they contain, the nature of the animal's food. When disturbed the black rhinoceros trots away with his head and tail both elevated; a female is followed by her calf in contradistinction from the other variety. The beast feeds during the night, and by day spends its time sleeping in covert; though in east Africa individuals are often seen standing out right in the open throughout the day. It is often accompanied by rhinoceros birds (*buphaga*) which give the alarm on the approach of enemies. Sight is poor, but hearing appears very fairly good, and the sense of scent is most acute. Very little is known about the breeding habits.

The black rhinoceros has acquired a reputation for savage aggressiveness, which the experience of the best known hunters would by no means support. Considering the enormous numbers of rhinos which were killed in former days in south Africa, and the considerable quantity annually shot in east Africa, and elsewhere at the present time, the number of accruing accidents was, and is, ridiculously small. It is a formidable-looking brute, and its appearance when bearing down to the accompaniment of snorts, reminiscent of a steam engine, is not reassuring; but it appears probable that many of these so-called charges of *unwounded* animals are merely efforts to escape from what they consider a tight place. If suddenly disturbed it is generally agreed that the rhino will often, by accident or design, come straight in the direction of the aggressor; but if the latter gets quickly out of the way it will usually rush right on, obviously seeking only to escape. In occasional encounters with the animals within the game reserves, the writer has always found that a gentle tapping on a tree or some other slight noise, insufficient to seriously startle the animal, has always sent it off at once; and the same experiment has had similar results on the occasions when these animals have been encountered in other parts of the continent. No doubt there are old, or ill-conditioned rhinos just as there are in the case of other species, but, taken on the whole, the general evidence

points to the wild rushes, frequently so disastrous to transport of various kinds, being induced more by sudden alarm, coupled with blindness and stupidity, than by natural ferocity.

Rather an amusing incident occurred recently to a sportsman in the Sudan, where one rhino only may be shot upon a licence. Having heard overnight that tracks had been seen not far from the station, he sallied forth at dawn and quickly found them. Before he had followed the spoor for long, a rhino jumped up from behind a bush close at hand, and he killed it with the first shot. As he fired, another, obviously a male, also got up near by, and after one glance round, made off as fast as possible, behaving, as the hunter remarked, "like a perfect gentleman." He had just time to confirm his fear that the animal he had shot was a female, when her calf, a beast about as big as a donkey, suddenly arrived on the scene, and at once taking in the situation, proceeded to scatter the party. The natives took to trees, while the sportsman, finding a convenient ant-heap, proceeded to perch himself on the top thereof, hoping that shouts and the hurling of stones and pieces of earth would serve to scare away the bereaved offspring. The little beast, however, oblivious of such trifles, continued to run to and fro between its dead mother and the ant-heap, squealing furiously and continuously, making sufficiently clear its intentions towards the occupant of the latter. He indeed, felt himself in rather a predicament; apart from his desire not to injure his small assailant, he had already shot the one animal allowed under his licence, and breach of regulations, however afterwards condoned, imply considerable trouble and official correspondence. At last the situation became an impossible one; the noonday sun was blazing down on the shadeless ant heap, and the annoyance of the infant increased rather than diminished. So at last the sportsman decided to risk a solid bullet from his small bore, and taking a steady aim at a fleshy but non-vital portion of the little beast's anatomy, he fired. For a time the noise redoubled, and at first it seemed that an ascent of the ant-heap was meditated; but eventually discretion overcame valour, and at the end of a really strenuous two hours, the sportsman was able to descend, and stretch his cramped limbs.

In the bush of the eastern Transvaal the old bones and skulls of rhinos are even now often seen, showing how very numerous this animal must once have been in the locality. On the Athi Plains of east Africa, where but a few years ago they existed in such numbers as to form a constant source of annoyance to travellers, they are now

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only occasionally encountered. His size, stupidity, and want of manners all render it certain that the black rhinoceros is soon fated to vanish entirely from all his more accessible haunts. Although its best friend could not defend its existence upon grounds of possible utility to man, the total disappearance of such a strange old-world type would be none the less regrettable, and care should be taken that all declared game sanctuaries contain sufficient specimens to permit of the due preservation of the species.

Zebras

There are at the present day three distinct species of zebras inhabiting the continent of Africa: Grevy's, the True or Mountain, and Burchell's, the last comprising a number of sub-species. All zebras are strictly gregarious animals, fond of open plains, hills, or lightly forested country, and are essentially grass feeders. Like the rest of the horse tribe, they prefer rather a dry climate, and are accustomed to roll in dust or sand. They are regular drinkers, and are seldom found at any very great distance from water.

Various experiments have at different times been conducted with zebras, especially with the Burchell variety, with a view either to the evolution of a fertile hybrid type or to their domestication in their present form. As regards the former, some years ago Professor Cossar Ewart experimented exhaustively in the crossing of a Burchell zebra stallion with pony mares, selected because of characteristics which, outwardly at least, had the appearance of giving its members some slight affinity with the zebra. Hybrids partaking of the character of both parents were freely produced, but did not prove fertile in their turn, so that from these and other experiments it seems pretty certain that the two types have already travelled too far along the road of specific divergence ever to be re-united. Attempts to evolve a fertile hybrid from a zebra-donkey cross have been equally fruitless.

The experiments in domestication cannot be said to have been eminently satisfactory so far as they have gone. The deficiency in the zebra's forehand puts him to a great extent out of court as a riding animal, and for continuous traction he has been found to be incapable of competing with mules, or even donkeys; in fact, has shown himself "soft" by comparison. On the other hand, he has proved perfectly tractable, even when captured nearly half grown. Captain Hayes relates having handled and broken into saddle within two days an old stallion belonging to the true or mountain zebra

type, a species generally believed to be much less amenable than the Burchell variety. Mr. Zeedeberg, of Pietersburg, in the Transvaal, for some years used zebras in the stage-coaches running to Tuli, and found them satisfactory, except for their serious want of stamina. As is well known, the Hon. Walter Rothschild used to drive a team of zebras in London, and at various times and places these animals have been so made use of. The underlying weakness of all these experiments, in so far as they were designed to supply an answer to the question as to the permanent utility of zebras as beasts of burden, seems to lie in the fact that they were not persisted with for a long enough time. Horses and asses have thousands of years of domestication behind them, and have inherited from a long line of ancestors, specially trained and often artificially fed, traits of endurance which it would be unfair to expect to find in purely wild animals. The mule, the hybrid offspring of the two species, unites in himself many of the best physical qualities of both his parents, and has for that reason long occupied a high position as a transport animal. But the zebra, in physical conformation, is sturdier and more compact than the mule or donkey, besides being fleeter than either; he has besides the immense advantage of being entirely immune from horse sickness and nagana disease, those equine scourges of Africa; therefore his adoption as a transport animal in many places would confer great advantages. But in order to test thoroughly his utility, it is absolutely necessary that the experiments should be persisted in through several generations of animals born in captivity, and specially fed and worked, in order, as far as possible, to bring them on level terms with their competitors. It is obvious that upon economic grounds it would be necessary to make any general use of them only in such districts as are unsuitable for other equines, and for the success of the experiment it would be desirable to retain them permanently within these districts, otherwise absence for a generation or two from the influence of infective agents might very possibly destroy their immunity. It is doubtful whether the zebra, crossed with either horse or donkey, would produce an entirely unsusceptible hybrid, and in this case the chief economic value of the test would be lost.

Both in British and in German East Africa experiments in capturing Burchell's zebras on a large scale have been made. Large and strong enclosures, with funnel-shaped entrances, were constructed, and into these were driven several herds. Men then took up their quarters within the enclosures, to accustom the

animals to their presence, and in a few days not only the young, but the full-grown ones had grown so perfectly unconcerned, that in a short time it was possible to handle them with ease. As regards British territory, the experiment was put an end to by the death of most of the animals from intestinal worms, which probably were fostered and quickly communicated through the comparatively restricted range available, while some antidote, which no doubt is easily found where the area is sufficiently large, may have grown in insufficient quantity to meet the requirements of the stock on the ground. I understand that the same trouble is, or was, in less degree, present among the animals in the Duke of Bedford's unique collection at Woburn, and there can be little doubt that this is one of nature's methods of restricting the overgrowth of species within limited areas.

Grevy's Zebra (*equus grevyi*).—Grevy's zebra is an inhabitant of Abyssinia, Somaliland, and the Lake Rudolph district. It is the largest of all the tribe, attaining a shoulder height of nearly fifteen hands, and is very closely striped right down to the hoofs. It seems a beast that might well be worth experiment for domestic purposes.

The Mountain Zebra (*equus zebra*).—The true or mountain zebra is the smallest of the group of hippotigrine equines, standing some twelve hands at the shoulder. It was always a local animal, never having been found beyond the limits of the Cape Colony and parts of German South-West Africa, though types of the Burchell species, showing certain affinities, have been noticed elsewhere. The species suffered so much during the past century from shooting at the hands of the colonists, that its range is now restricted to a few isolated districts, and its complete disappearance is possible in the not very remote future. Its principal safeguard, in addition to the protection now afforded it, lies in the fact that it confines itself to the more inaccessible portions of the mountain ranges, where it runs in small troops, and is generally extremely wary. It has often been written of as a very fierce and untamable creature, but, as these were qualities which the hunters of former days were fond of ascribing to most of the animals which they pursued without any very solid foundation for the assertion, the mountain zebra, though doubtless less amenable than Burchell's, need not necessarily be judged on this evidence. In fact, Captain Hayes' successful breaking of a full-grown stallion of the species to saddle is in itself sufficient to show that with proper, quiet handling

it can be brought into subjection. The period of gestation is about twelve months.

Burchell's Zebra (*equus burchelli*). — Burchell's zebra is by far the most numerous and widely distributed of the group. So extended is its range that it has become divided into a number of local varieties or sub-species, which merge almost imperceptibly the one into the other, though the types at opposite limits of the specific range differ considerably in their marking. The most northerly form is that known as Grant's, which extends from southern Abyssinia and the Egyptian Sudan on the north, through Uganda and British East Africa, until it links up with Crawshay's zebra of Nyasaland and northern Rhodesia. Both these varieties have strongly contrasted black and white markings (without a trace of shadow stripes), which continue down to the fetlocks. Upon crossing the Zambezi, the impediment offered by that waterway to the free migration of animals, and its consequent bearing upon type, is evident in the presence of what are known as "shadow stripes," that is to say, light brown bands impinged upon the white ground which separates the black markings.

Naturalists have divided these southern Burchell's zebras into a number of sub-species—*Selousi*, *Chapmanni*, *Wahlbergi*, and *Transvaalensis*—consequent on the dissimilarities of the striping observed in museum specimens. Generally speaking, no doubt, the further the species trends south the less contrasted becomes the striping, and the greater the tendency to conform to a desert type of plain brown above and plain white below. The typical Burchell's zebra (*equus Burchelli typicus*), which is now extinct, or nearly so, was distinguished by a strong development of the shadow stripes and a corresponding shrinkage of the black markings, the legs and underneath parts being pure white. It is now held by some that the extinct *equus quagga* which once roamed in immense herds over the Orange Free State and Cape Colony, was merely the southern development of Burchell's zebra along the foregoing lines of transition. His general body colour was light brown, becoming white on the belly and legs, while not only had the leg markings entirely disappeared, but the black stripes themselves showed a tendency to become obsolete, having in great measure disappeared from the body. The typical specimens differed so markedly in appearance from the true Burchell that for long it was assumed, as a matter of course, to be a distinct species; but comparison of the museum specimens existing in Europe shows that the striping of the animal varied considerably in degree, either

in individuals or according to locality, and some of the examples display sufficiently close affinity to the most southern type of Burchell's to throw considerable doubt on the belief that there existed any specific difference. Dr. Gunning, however, called my attention to the cast of the skull of a true quagga exhibited alongside that of a Burchell zebra in the Transvaal Museum; and the greater width of the frontal and nasal bones, as well as the more pronounced curvature of the latter in the quagga, was very noticeable, though possibly due only to individual eccentricity.

Although science has thus divided Burchell's zebra into so many sub-species south of the Zambezi, there is really no deeply marked line separating any of them, and even in German East Africa animals have been found with indications of shadow stripes. In south Africa the marking of individuals, not only in the same districts, but in the same herds, is by no means uniform, and the intermediate types are so numerous, that were all given rank as sub-species, the number of local races might be multiplied indefinitely. In the eastern Transvaal I have noticed in a herd animals strongly marked on the quarters with broad stripes of alternate black and brown, showing very little white, and the outside of all four legs, down to and including the pasterns, banded with deep black. In the same herd have been present others displaying the lightest of striping and a large proportion of white on their sides, flanks, and quarters. In some of these latter animals the markings below the knees and hocks are few and slight, even occasionally absent altogether. As a rule, I think, old stallions show stronger and fuller markings throughout than females and immature animals. Indications of shadow stripes on the neck have been very seldom noticed. In the Zoological Gardens at Pretoria are several zebras from the western Transvaal, all from the same or adjoining districts, and even these few specimens vary most markedly from one another in the nature of their leg striping. Any or all of them might easily have come out of one herd in the eastern Transvaal, so far as my experience of the latter area goes. On the whole, then, I am personally inclined to think that it is a very difficult matter to divide the southern Burchell's zebras arbitrarily into sub-species merely from the study of a few isolated specimens.

Burchell's zebras are naturally so sociable, that not only are they themselves often found in very large herds, but the herds themselves are constantly found associated with other animals, especially in the Transvaal, with blue wildebeest; though single individuals seldom

Burchell's Zebra from the Transvaal. (Legs partially striped.)

Burchell's Zebras from the Transvaal. (Legs fully striped.)

seem to join themselves to troops of antelopes. Near Nakuru, in east Africa, the size of the herds is still astonishing. Fully a thousand may at times be seen in one body, while the plain for miles is covered with smaller troops. Latterly, in the Transvaal Game Reserve, where for a long time zebras were found scattered about in small family parties, they have similarly consorted; so that a piece of country one day nearly deserted is on the next covered with hundreds of animals.

Although in south Africa more shy than the wildebeests, with which they are so often found, and always of the two the first to move off, zebras on occasions betray the most intense curiosity, and, where accustomed to be unmolested by man, have a way of stampeding past a train of pack donkeys at close quarters, most disconcerting to the latter, which are only too inclined to follow suit, to the great detriment of any camping paraphernalia wherewith they may be loaded.

Zebras are not often noticed lying down; but Major Fraser, of the Game Reserve, relates having observed a whole herd in this position about the middle of the day, in October or November; a number of foals were present, which were chasing each other about through the recumbent troop, occasionally jumping over their mothers. Although a good many young seem to be born in the Transvaal about the end of October or early November, it seems probable that they go on being dropped throughout the greater part of the summer. The period of gestation varies between eleven and thirteen months. The usual drinking time is at night or very early morning, but in the cold weather in the Transvaal I have noticed them watering pretty regularly about midday. Later in the year, after a hot day, they sometimes drink at sunset, and in this case, no doubt, graze at no great distance from the water during the night. Although quick with his heels upon occasion, the offensive and defensive weapon of the zebra is primarily his teeth. If a herd is quietly observed, it will be noticed that a great deal of biting goes on amongst the members, but very little kicking, and a tame animal which happens to be at all vicious always runs at the intruder with his mouth open, or teeth bared. The cry of the Burchell zebra is a shrill "wa-wa-wa," repeated several times. They are rather noisy animals when assembled near the drinking places, and their call is one of the commonest night sounds in a game country. They are very liable to panic and stampedes, and their custom, when frightened, of dashing through wire fences and other artificial obstacles, forms,

in east Africa, one of the principal causes of complaint agains them. Once when the writer was following the tracks of some lion a small troop of zebras, a little distance in front, caught sight of th cats at close quarters, though they were invisible to us, and th sudden headlong rush they made was a thing to remember. Conduc of another kind was observed by one of the rangers a few years ago As he was riding along the bank of the Olifants River he suddenl heard zebras making a great noise just in front, and, coming into clearing, he found that three lions had just pulled down a mare, bu had not yet killed her. The rest of the troop were standing som twenty paces from the lions, facing them in a semi-circle, ver excited and making a great noise, but showing no disposition t bolt; the foal was intermediate between its dam and the herd. O the ranger firing at one of the lions the zebras at once stampeded but the young animal waited about for its mother, which, thoug badly clawed, was able to get up and make off also.

Another ranger came on a lion and two lionesses taking thei midday siesta within a hundred yards of a troop of zebras Neither party was taking the least notice of the other, so far as h could judge. One lion was lying on its back, with all four legs in th air, like a cat before the fire, while the zebras were standing abou apparently half asleep. The lions must have been clearly visible t them. Incidents such as this illustrate the perfect understandin which the wild creatures have of each other's ways, and how fa man is from a clear comprehension of them.

We lost all the horses from Sabi Bridge for two days, owing t their being stampeded by a solitary zebra stallion, which gallope off, followed by them. Although they kept close behind him, it wa remarkable that when at length discovered, nearly twenty mile away, they were vigorously opposing all his efforts to come close t and join them. There are many cases, however, of single runaway horses being found in conjunction with troops of zebras, and this i still more true of mules, which seem to have a greater affinity wit them. In fact, it is no easy matter to keep mules from stampedin when there are zebras about, and several have been permanently los in the low country in this manner during the last few years. horse will often come home again after his escapade, but a mule ver seldom. Therefore, anyone travelling with transport animals where zebras are numerous would do well to see that the native herd attend to their duties when the animals are at grass. I have onc heard of a case of albinism. Amongst a herd of Burchell zebra wa

Two Burchell Zebra Stallions obtained for the Transvaal Museum during Sep. 1911, in the Government Game Reserves.

♂ 6 years old, striped to pasterns, which are black. ♂ 10 years old, white legs and pasterns.

Observe the great contrasts in the patterns of body and head striping in each. Both these animals came from the same troop, near the Sabi River, Eastern Transvaal. Latitude 25° 15′ South, Longitude 31° 20′ East.

noticed an animal which appeared to be a white mule or donkey, but which, on closer inspection, proved to be a zebra, so far as could be seen, quite devoid of all markings.

The African wild ass (*equus asinus*), inhabits the dry countries to the east of the Nile, from about 17° to 5° north latitude. It is grey in colour, with black leg and dorsal markings. Two local races are recognised.

CHAPTER VI

THE HIPPOPOTAMUS: WILD PIGS: THE GIRAFFE

THE Hippopotamus (*hippopotamus amphibius*).—The range of the hippopotamus once extended to the whole of the Ethiopian region, wherever there was suitable water, and also down the Nile to its mouth. At the present day it is not found in the latter river until some considerable distance above Khartum; but south of the sudd, and especially on the Bahr-el-Ghebel, between Nimule and Lake Albert, it becomes quite numerous. It exists east and south of this point, on all the lakes and waterways of equatorial Africa; although the fact that it may be shot without a licence on the Nile, and on Lakes Victoria and Albert, is tending to reduce its numbers in these particular localities. On the middle and lower Zambezi hippopotamuses were, until a very short time ago, exceedingly numerous. In 1898, while navigating the former in a steam launch, we used in places to come on large herds, sometimes consisting of twenty or thirty animals, which practically filled up the whole channel of the river, and so indifferent were they to our presence, that not until the steam whistle was brought into play would they consent to duck their heads and allow us to pass. At that time, too, they were fairly plentiful on the lower reaches of the river between Tete and Chinde; but the cruel and unsportsmanlike practice of shooting at them from passing steamers has almost entirely destroyed or driven them away from the lower Zambezi and the Shiré, and in 1908, when coming down from Port Herald to Chinde, not one was seen. They were plentiful ten or twelve years ago on the Kwando and other western tributaries, which, by their nature, are well suited to the habits of the animals—consisting of a deep channel, bordered on one side by extensive reed areas, and on the other by grassy wooded banks. In all probability, little has occurred to disturb them since that date in those unget-at-able places. South of the Zambezi they are still found in suitable localities in southern Rhodesia, though to the west and south-west shooting and the desiccation of the country have greatly restricted their range. On the Limpopo and Olifants Rivers, both in British and Portuguese territories, there are still considerable numbers. Near the junction

of the latter with the Letaba, when, at certain seasons of the year, the rivers are full and pools adjacent to the banks frequent, there may be seen a really astonishing collection of these animals. During the dry season they seem to go down in search of deeper water, and, getting into Portuguese territory, suffer to some extent from native attacks. The parallel rivers—Sabi, Crocodile, Komati, Lomati, Usutu and Pongola—are all well stocked. On the Komati, near the boundary, a herd of over twenty has been carefully preserved for the last twelve years, and they have become so tame that belated passengers, meeting them ashore of an evening, find that, so far from giving place to human beings, they desire to assert their right to the path. In the numerous pans of Amatongaland, near the Pongola, there are great numbers of hippos which are partially protected by a £10 licence, and this forms very nearly the most southerly point at which the species now exists. Some seven years ago more than twenty of them in the largest of these pools—the Ebumbe Pan—died within a few days from some unexplained cause. A veterinary officer was sent down to investigate, but apparently without result; so whether they were poisoned by natives, who were at that time suffering from the starvation consequent on a prolonged drought, and may have wanted the meat, or whether the reason lay in some deleterious influence exercised by the partial drying up of the edges of the pan and effect on the food supply, must remain a mystery. At all events, no more died, and no sign of sickness has at any time since been noticed amongst the survivors. In the rivers of the Transvaal high veld, the Orange Free State and Cape Colony, there are no hippopotamuses at the present day, and the last existing in Natal, which were preserved in Sea Cow Lake, near Durban, were destroyed in 1898, on the plea that they had become very destructive.

Hippopotamuses are thoroughly aquatic animals, and when frightened or disturbed, at once make for their natural element with all speed. During the day, and in places where they are unmolested, they sleep by preference in rather shallow water, the herd grouped closely together, their great heads sometimes resting on each other's backs. They may even be found occasionally asleep upon mud banks. In more frequented localities they float in deep water, the nostrils alone protruding above the surface; or they rise every five minutes or so for the purpose of breathing. Towards evening they leave the water and go ashore to feed, travelling by the well-trodden "hippo paths," which, wherever these animals are

plentiful, intersect in all directions the bush and reeds bordering the stream. Although, where food happens to be scarce, hippopotamuses are capable of travelling considerable distances from the water during the night, under normal circumstances the limit is under a mile, and they always get back to their old quarters before morning, unless they have sought and found a new abode. An animal belated on his feeding ground a long way from his usual day haunt would seek the nearest suitable pool until nightfall. On the Transvaal Sabi, where, though not numerous, the beasts are very tame, they are not infrequently to be seen wandering about, or resting on one or other of the shady islands which abound in mid stream.

The food consists of young shoots, grasses and reeds. The hippopotamus does not grub for roots or eat fruit. It is capable of doing great damage to cultivated lands, not only by actually eating the crops, but by the manner in which it tramples down and destroys things. Consequently, its conduct in this respect causes a great deal of complaint, and, where protected by law, natives and others often seek the easiest means of prevention by applying to have the erring animals killed—incidentally looking forward to a big feed of good meat and a plentiful supply of the valuable hide and fat.

As a matter of fact, the lowest fence, provided that it is solid and upright, will always stop a hippo. Like a pig, he never attempts to step over an obstacle, and does not push through an impediment which he recognises as artificial. Natives of many tribes in Africa are so naturally indolent that they prefer to risk any loss rather than take a little trouble to obviate its occurrence. Therefore, the so-called fences often seen intervening between crops planted close to the water's edge, and the water itself, positively invite attack, in that they consist merely of a few thorn bushes or branches laid on the ground, often not even touching each other. That, under such circumstances, the crops suffer can hardly afford cause for surprise. Among the few African peoples who do go to the trouble of constructing strong obstacles, the losses appear to be trifling.

A few years ago, a gentleman owning a farm on the Lomati River in the Transvaal, having a stream frontage, suffered annually considerable pecuniary loss, owing to the manner in which the local troop of hippos were accustomed to raid his young mealies. Although legally free to shoot the animals if found *in flagrante delicto*, he nevertheless refrained in the most laudable way from doing so, and approached the Government with a view to receiving relief.

Eventually a sum was detached from the Game Preservation Vote, and with it a barbed wire fence of three strands (only some three feet high) was constructed, enclosing the part of the farm facing the river. After the next harvest, the present writer had a letter from the proprietor, wherein he expressed his entire satisfaction with the fence, and stated that the hippos had never made the slightest attempt to break through this not very formidable impediment. Other instances of a similar nature might be quoted to indicate that there are other means of checking the inroads of this animal than by destroying him; but the latter method is so much easier, and withal so far more in harmony with traditional African custom than a little hard work, unaccompanied by the tempting inducement of meat and hide, that it is the one usually adopted.

The specific gravity of the hippopotamus is such that it is able to walk along the bottoms of the rivers with ease, rising to the surface to breathe at intervals of about five or six minutes. It is an extraordinarily powerful swimmer, and can force its way up stream in face of the most prohibitive currents.

The period of gestation is from two hundred and twenty-seven to two hundred and forty-two days. A single young one is born at a time, and, while too small to defend itself, is carried on its mother's back while in the water. Crocodiles would no doubt be serious enemies to the calves were their dams not at hand to protect them, and there seems to be little doubt that about calving time, either the mother herself or others of the herd drive all the crocodiles away from the vicinity of the pool in which they happen to be lying. I noticed on two occasions on the Sabi, that when a certain deep pool, always the haunt of several crocodiles, became temporarily the resting place of breeding hippo, the crocodiles completely disappeared, though they were subsequently found there after the other animals had departed. The cows are, not unnaturally, inclined to be vicious about the calving time, and it is then that they sometimes attack canoes and boats, perhaps seeing in them strange monsters having designs on their little ones. The old bulls, too, not infrequently act in a similar manner; but probably most of the accidents which occur are due to animals, either in play, or by chance, rising beneath the boat, and so capsizing it. Except when wounded, the cases in which hippopotamuses, having acted thus, actually pursue human beings in the water are very rare, tending to show that no ill-feeling is felt; nevertheless, it is no light matter to be upset in the middle of an African river, swarming, as most of them do, with crocodiles.

The few hippos remaining in the pools just above the Victoria Falls have become very savage and aggressive, through continuous persecution, and accidents to boats, often with fatal results to the occupants, are not at all uncommon. Hunting hippopotamuses from a boat is therefore one of the most exciting sports imaginable, just as shooting at them from the shore is one of the tamest. Some of the Nilotic tribes harpoon them with a lance to which is fastened, by a long cord, a piece of the very light ambatch wood. The latter acts as a float, and indicates the exact position of the animal. The hunters then pursue it, spearing the beast every time it rises to the surface to breathe, until at last it becomes exhausted, and sinks dying to the bottom of the river.

The hearing, sight, and scent of the hippopotamus are all acute; but, like many other wild animals, he suffers from an inextinguishable curiosity, and cannot resist putting up his head to have a momentary stare at a passing boat, a weakness which often costs the poor beast his life. His voice once heard can never be mistaken or forgotten: it consists of one deep, roaring grunt, followed by four or five shorter ones in quick succession, and is quite alarming when heard for the first time. I shall never forget the flutter which an old bull hippo, working slowly up the river about dinner time one night, caused among the Johannesburg railway men employed at Sabi Bridge last year. It was believed that all the lions in Africa were approaching, and nothing that could be said had any calming effect.

When lying with head partially protruding, a hippopotamus is often most persistently attended by large biting flies (probably *tabanus longitudinalis*). That an animal possessing so thick a hide should have an attraction for any blood-sucking insects seems at first sight remarkable; but probably the soft skin about the eyelids and elsewhere is easily penetrable by their long probosces.

A cross old bull hippo has curious dislikes at times, and one of his pet animadversions seems to be a camp fire in his vicinity at night. Ranger Wolhuter was encamped in 1904 on a pool of the Ngwanitzi River. About 10 p.m. a well-known old hippo bull which was always found near this particular spot began to loudly voice his objection to the fires. After making a great deal of noise in the pool, he eventually landed and began to approach, grunting all the time, and displaying every symptom of rage. A horse and a number of pack donkeys were in camp, in addition to Wolhuter and his native servants, and began to show signs of considerable

uneasiness. A shot or two fired over the beast's head concerned him not at all, and when he had approached within less than twenty paces, as a last resort, the fires were put out. This had a magical effect, and, having apparently in his own opinion thus duly enforced his authority as guardian of the pool, the great beast turned and went slowly grumbling away, to be seen no more that night. The camp was moved next day. The same animal had, a little after this occurrence, a rather exciting evening with three lions. They must have been very hungry, and they caught Wolhuter's friend at some distance from the water. The noise was deafening, and all the details of the struggle could be distinctly heard at the camp, over half a mile distant. In the morning, it was clearly indicated how the hippo had trudged along, until the water was reached, carrying the lions on his back, or dragging them after him as they made unavailing attempts to get their claws through his skin: he had then plunged in, and one of the lions had apparently fallen with him, to scramble out quickly, doubtless glad to escape unharmed. There were no blood marks, nor any sign of the hippo having been in any way injured; probably indeed, except in the shock to his already none too amiable temper, he suffered little inconvenience. Of course the lions must have been hard driven before attempting to tackle so formidable a brute as a bull hippopotamus, albeit out of his natural element: one snap of his huge jaws would have sufficed to crush the biggest of them into a pulp; but no doubt they relied on their agility, and his relative clumsiness on land, to preserve them from harm.

In following hippo paths through dense reeds or bush, some vigilance should be exercised, as there is always the chance of one of the animals being on shore: when if suddenly startled, he will rush headlong towards the water, by the nearest path, in a manner distinctly embarrassing to anyone who happens to be in the way.

A most delightful animal was "Sikabo"—the young hippo given a few years ago by Lewanika, paramount chief of the Barotse, to Lord Selborne, and presented by him to the Transvaal Zoological Gardens. For a considerable time he used to take the air in the grounds in the wake of his native keeper, accepting in the most friendly spirit any attentions paid to him; when he grew too big to go out in this way, his races with his attendant round the edge of his tank, and his somewhat elephantine gambles in and out of the water, always formed a great attraction to the public. He once nearly paid a penalty for his friendliness when an ill-conditioned youth threw an empty soda water bottle into his mouth. Luckily the native in

attendance had the presence of mind to dart in his hand and snatch it out before the jaws closed, or the results would have been disastrous, and probably fatal. When he was being brought down the Zambezi, Sikabo used to swim behind the canoe containing his attendant. On sighting any of his own kin, he would at once seek the bank, and travel by land until well past them.

The whips made of the skin of the hippopotamus, variously known in Africa as sjamboks, kibokos, kourbashes and so on, have considerable value, especially in south Africa at the present day, when they have become rarer than of old, and this naturally puts a premium on the destruction of the species where not specially protected. The ivory had apparently at one time a greater commercial value than is the case at present.

The mention of the animal's hide is reminiscent of an incident said to have occurred during the South African War, when a number of troops were proceeding up country from Beira. It is related that an enterprising local gentleman, having cut a number of strips of hippo skin into six-inch sections, went round the carriages, as the train containing the soldiers stopped at a station, and sold all his wares at a shilling each, as genuine "biltong" or dried meat! The subsequent remarks of the troops, composed principally of Canadians and Australians, are not related: probably the enterprising trader was fortunate in being too far away to be reached.

Like the rhinoceros, this beast, though of no apparent use to man, is a survival, now confined to Africa, of an earlier era in the earth's history, and one which it would be sad to see disappear.

Another species known as the Pigmy Hippopotamus (*H. liberiensis*) is found in west Africa, in the neighbourhood of Liberia.

Suidæ

The Warthog (*phacochœrus æthiopicus*).—Writers concerning the warthog generally commence by enlarging upon the hideousness of his appearance. Beauty is of course a relative term, and it must be admitted that the animal in question has neither the gentle comeliness of the gazelle nor the lissome grace of the cat tribe. At the same time, to say he is repulsive in appearance is a little hard. Quaint, no doubt, and so out of the common in feature that his appearance causes surprise on first acquaintance, but why hideous?

The species is spread all over the Ethiopian region, but is now extinct south of the Orange River. It favours lightly forested country, and is never at any great distance from water. It is

Native Police Post in the Transvaal Game Reserve.

Warthog caught in Net.

generally seen in small parties, the boar and sow accompanied by the last litter; when the latter have become about half grown the boar appears generally to desert his family, and thenceforth, until the next breeding time, the females are seen solely accompanied by their offspring, or by such of them as have survived. I am personally inclined to believe that at each mating season the boars return so far as possible to their old consorts, as I have for several seasons running seen animals together, which, from certain noted peculiarities, I think I recognised; but it is not a matter to be dogmatic upon. There is, at any rate, no doubt that from the birth of the next litter, last year's progeny have to go away and fend for themselves. Four young ones at a birth seem to be the rule, and I should think any excess of this number must be abnormal, as the female possesses only four teats. October appears to be the month when most are born in the Transvaal, and the period of gestation is slightly over four months. The little ones are extraordinarily active almost from birth, and I recollect riding after a sounder once, when the youngsters, under a week old, could move as fast as a native could run, and, but for the horses, must have escaped. There were faint indications of dark transverse stripes on some newly-born animals which I once found, though they gradually disappeared within a few days. It is the only occasion on which I have ever noticed anything of the sort, and the occurrence was so entirely opposed to all previous ideas on the subject that opportunity was subsequently taken to question a number of old natives at different times and places regarding it. The general impression conveyed by their answers was that this phenomenon is now and then, though very rarely, observed in newly-born warthogs.

The habit of holding the tail erect, when on the run is common to the young from birth, as well as to the older animals. There has been much discussion as to the position of the little tail tuft. Millais in his charming "Breath from the Veld," insists that it is pendent in a forward direction. Having taken some trouble to observe what actually occurs, the writer can confidently state that the tuft actually wobbles about like a flag, sometimes fore and sometimes aft, but curiously enough when the animal is stationary with vertical tail previous to departure, the tuft is often nearly or quite perpendicular. Warthogs often lie up during the day in holes or in thick bush; in cool weather, however, they may be seen on the move at any hour. They are very fond of occupying the holes of ant bears and porcupines, into which they retire backwards, so that care should be

taken in approaching a recess believed to contain one of these animals. Though by no means of savage disposition, the warthog possesses much of the courage of his family, and fights bravely when cornered. Lions and leopards when attacking them are believed to always seize them from behind, to avoid the swing of the tushes. Natives say that a leopard does not care about attacking an old boar. Dogs, to most of which the sight of a warthog is as a red rag to a bull, often suffer severely when it has been brought to bay, and, in the game reserve, some of our animals have been thus terribly cut about at different times. I remember once on the Upper Nile suddenly disturbing a female with four young ones, three of which "crouched" instead of running away, and I was much struck by the gallant way in which the sow, finding most of her family missing, turned and came back in my direction, to pause and retreat only when all had rejoined her.[1] The usual pace of this animal when running away is a fast trot, the head, as well as the tail, held high; it is seldom that it breaks into a gallop, and then but for a short distance. Occasionally, solitary boars are to be seen in conjunction with antelopes or zebras, but generally feed at a little distance from the herd. Warthogs are gifted with a very keen sense of smell and acute hearing, but the eyesight appears to be rather deficient. Favouring open forest country, they eat grass and also dig for roots, though they do not turn up the soil to the same extent as bush pigs. The yam-like roots of some of the acacias appear to be sought, and the bark is sometimes stripped from the stems of the bushes. I never found that they attempted to do any damage to growing crops of any kind, and I believe them to be in every way harmless, with the possible exception of occasional egg eating. They are very silent animals.

The Bush Pig (*potamochœrus chœropotamus*).—The novice may easily distinguish the bush pig from the warthog, by his reddish grey colour, the long pencilled tufts on the extremities of his ears, and the fact that, when running, both head and tail are held low. He is also a much more noisy animal, and grunts and squeals much like a domestic pig. He ranges practically all over Africa south of the Sahara, and, owing to his secretive habits, is likely to have a long life as a species.

[1] I once personally witnessed a female warthog charge a big male leopard which had attacked her offspring. The cat turned tail at once, fled, closely pursued, for about thirty yards, and then sprang into a tree. From this sanctuary it growled and snarled at its adversary, but showed no disposition to descend.

Several varieties have been named; but their habits are probably nowhere greatly dissimilar. The following notes have reference to the animal as found in south Africa.

Bush pigs lie up by day in very thick bush or other covert, so dense that a man has difficulty in forcing his way through, and has constantly to stoop, or even crawl. During the night they leave shelter and proceed to seek their food: this consists principally of roots and wild fruits; but, like domestic pigs, they are largely omnivorous, and eggs, reptiles, insects, and carrion are all devoured. They do immense damage to cultivated lands, not only eating, but wasting and destroying growing crops of all kinds. Owing to their strictly nocturnal habits, they are exceedingly difficult to bring to book. Trapping is seldom efficacious, and sitting up for them by moonlight only occasionally effective. Sometimes, in the very early morning, they may be found feeding in the open, but by sunrise they are almost always back in the densest brake. They are more gregarious than warthogs, and are sometimes seen associated in quite considerable troops. Where a few of these pigs have been feeding during the night, the ground, sometimes for half an acre, is left torn up as if by a plough, while broken bits of roots and branches are scattered in all directions, and overturned bushes and other debris complete the scene of confusion.

The young are born with yellow lateral stripes, and during the summer season. The size of the litters appears not to be strictly constant.

Bush pigs are animals of considerable courage, and charge fiercely when wounded or bayed by dogs, so that under such circumstances they must be approached with caution. They are partial to ostrich eggs, when opportunity offers, and for that and other reasons are considered as vermin in the Transvaal: not that their existence, as a species, is in the least threatened thereby, or their numbers likely even to be reduced appreciably.

The Forest Hog (*hylochœrus meinertzhageni*).—The following notes on the habits of the giant hog were made by the writer while in east Africa recently. The very small degree of information at present to hand concerning this animal must be the excuse for offering them, as they are of the roughest character.

Giant hogs are found in the dense forests of east Africa at heights of 7,000 or 8,000 feet. They go about singly (probably old boars) or in parties of from eight to ten. They like to root about in exactly the same manner as the south African bush pig, and the excavations

are still deeper. They favour the thickest jungle, in which they have regular "runs" or tunnels excavated through the dense undergrowth. These tunnels are from two to three feet high, but the pigs can, upon occasion, squeeze under much lower places, indeed so low, that to get through a man has to make his way extended flat upon his face. In the Kikuyu Forest these runs are so much used that they are positively littered with droppings and smell precisely like pig-sties. The beasts do not seem to travel in the bush far from their regular runs; consequently, when disturbed, it is generally impossible to see them, as they dash down some covered way. The tunnels open out at intervals into glades, and small places in the bush are used as wallows, as well as for rooting; four or five roadways often open into these from all sides. There is an obvious love of much wallowing in soft soil, and at frequent intervals along the streams are very large mud baths, often measuring as much as twenty feet by ten, generally in places where the overhanging banks form natural excavations. The floors of these are one sea of deep, thick mud, evidently habitually used by families of pigs to roll about in, as the whole mass is always freshly trampled and is pounded into a sort of brown porridge. The tushes are sharpened upon trees, and I saw marks on a trunk at a measured height of four feet from the ground (of course to effect this the pig may have been standing on his hind legs, with his fore ones resting against the tree). The usual pace when disturbed is a trot, but when suddenly alarmed, they go headlong down the tunnels, making a very loud crashing. They utter deep grunts, much like those of an ordinary pig, though louder and more resonant.

Giraffidæ

The Giraffe (*genus giraffa*).—Dr. Johnson's definition of the giraffe as "an Abyssinian animal, taller than the elephant, but not so thick," requires considerable amplification at the present day, when scientists have not only divided the genus into two distinct species *g. cameleopardalis* and *g. reticulata* (the Somaliland form), but have classed the first of these into no less than ten sub-species or varieties, something after the manner adopted with the Burchell zebra. The gradation of type is manifested in the changing nature of the blotches on the skin, which vary from an irregular network of light markings imposed on a chestnut field in the northern or typical race, to the deep chocolate patches on fawn-coloured background characteristic of bulls of the Cape race. Again, while the

southern types are spotted on the lower parts of the legs, this trait is entirely absent among northern animals. It is therefore clear that the causes affecting coloration have had a precisely opposite effect on the giraffe, during his passage from north to south of the continent, to that which they have exercised in the case of the Burchell zebra. That is to say, the animal has evolved from a light-coloured beast with white legs, and no very highly contrasted body marks, into one highly specialised in the matter of markings. While the body spots have tended to accentuate in the southern race, the horns on the other hand have tended to modify. In the Nubian form a very prominent third horn appears in front of and midway between the others, and in some eastern types there is a tendency to the formation of a five-horned race, by the appearance of excrescences behind the original horns. Although, in respect of the third horn, a very marked contrast is evident between the extreme northern and southern types, there does not appear any very even and constant gradation between them. An inspection of fourteen giraffe skulls all shot by a professional hunter within a few days' march of each other in German South-West Africa, revealed the presence of considerable variety in the horns. The forehead enlargements varied much in size in individuals, and there were, in one or two, even indications of the two additional rear horns.

The distribution of the giraffe comprised, outside the west African forest zone, nearly the whole of the Ethiopian region from the Tropic of Cancer to the Orange River and from Nigeria to Somaliland. At the present day it does not range further south than Komati Poort (lat. 25° S.). The species has increased considerably in the Transvaal Game Reserve of recent years, and is found sparingly through Portuguese East Africa up to the Zambezi, and in the northern Kalahari, the western part of Matabeleland, and Khama's country. Thence giraffes are found wherever the nature of the country is suitable, through most of German South-West Africa, Angola, and north-western Rhodesia west of the Zambezi, Nigeria, the Congo, German and British East Africa, Somaliland, and the whole of the country generally known as the Sudan, to the west coast. Through northern Rhodesia, east of the Zambezi, Nyasaland, and northern Moçambique, they are not seemingly indigenous. Indeed the only recorded herd is one on the Loangwa River, probably recent immigrants from the north.

Giraffes are fond of rather dry and fairly open country. They are never found in the strictly forest regions of the continent. They are

purely browsers, and are especially addicted to the leaves of certain thorn acacias, notably *acacia giraffæ* (the kameel dorn). They are generally seen associated in troops of from three or four, up to twenty individuals, and, as with other wild animals, old males frequently wander alone. In drinking (which in a well-watered country they do regularly), giraffes straddle out their forelegs in little short jerks, so as to get their long necks down to the water. They appear to be absolutely silent animals. Sight, scent, and hearing are very acute, and their curious rolling pace, caused by the fore and hind legs of the same side being moved together, takes them over the ground at a great speed. When standing still amongst the trees, they are extraordinarily difficult to distinguish, indeed the head, peering over the top, is often the first part of the animal to catch the eye. In the north-eastern Transvaal the young are born from about October onwards for two or three months, and one young one is produced at a birth. The period of gestation is about fourteen months (fourteen months and six days in the Regent's Park Gardens).

Although the giraffe is a very defenceless and timid animal, his great size renders him when full grown to a large extent safe from all enemies except man. During eight years in the Transvaal Game Reserves, I met with only one authenticated instance of a giraffe having been killed by lions. This was an old solitary bull, and four or five of them took part in his death. Until protected by legislation, however, giraffes suffered dreadfully from the attacks of human hunters both European and native, for the tails were worth, amongst the east coast natives, the equivalent of one pound sterling each, and the hides were most valuable for making sjamboks, as well as the lashes of the long whips used with the ox waggons. To this day one meets everywhere in the Sabi Bush with the old shin bones of these animals, showing how numerous they must once have been. From a purely sporting point of view there is little in favour of shooting a giraffe; he is so gentle that there is no excitement connected with the matter, so big that it takes no skill to hit him, and in addition, he furnishes no trophy which is worth preserving. In old south African days the wasteful method of hunting the animals on horseback was, of course, intensely exciting, owing to the rough country the chase often led over, but since at the present day there is no room for such practices, the giraffe is best left alone, the more so that, being harmless in regard to all man's works, the arguments sometimes used to advocate the destruction of other species do not apply in his case.

Bushpig (*Potamochœrus chœropotamus typicus*).

Giraffe, showing method of drinking.

The Okapi (*ocapia johnstoni*).—This remarkable animal, the nearest living relative of the giraffe, exists only in the dense forests of the Congo. Its existence was unknown to science until the beginning of the present century, but within the last few years a good many specimens have been secured. It is probably fairly numerous within its area; but owing to the denseness of the jungle it affects, and its shy and solitary habits, is almost unapproachable by white hunters. Some description of its habits are related in the late Capt. Boyd Alexander's "From the Niger to the Nile."

CHAPTER VII

THE BUFFALO: THE HIPPOTRAGINE AND BUBALINE ANTELOPES

Bovinæ

The African Buffalo (*bos cafer*).—Although there are very marked outward differences between the large Cape Buffalo (*bos caffer typicus*) and the small Congo variety (*bos caffer nanus*), the latter—the so-called bush cow—which retains its red colour through life, is said to be but a less specialised type of its larger cousin, which, of the same rufous colour in its earlier days, becomes black when mature, and thus both are believed to form merely local varieties of the same animal. Generally speaking, the buffaloes of west and north-west Equatoria approximate to the Congo form, while those of the east, north-east, and central regions resemble in appearance the typical variety of the south.

The last named portions of Africa were, until a few years ago, densely stocked with the animals wherever the country was suitable; but from 1889 onwards, the rinderpest, sweeping west and south, worked dreadful havoc with the herds from Somaliland to the Cape. At the present day buffaloes are preserved in several districts of the Cape Colony, and in the game reserves of Zululand. In the Transvaal there are about a hundred in the Reserve, representing the natural increase from the fifteen or twenty individuals which the rinderpest spared, as well as another herd of lesser dimensions on the Sabi River, outside the sanctuary. Until a few years ago a few existed in the Umpeluzi Poort between Portuguese territory and Swaziland. Of these eight were shot during the war by a single individual, and in 1903 there were said to be but three left, and they too have since disappeared. In Damaraland and southern Rhodesia some yet remain, and though the vast Pungwe herds have vanished before the combined attacks of hunters and disease, there are still considerable numbers in the more northerly parts of the province. North of the Zambezi they are found in Moçambique, and there are undoubtedly herds in parts of Portuguese Nyasaland, which was unvisited by the rinderpest, and has been hitherto unpenetrated by the white sportsman. Thence buffaloes are spread through

northern Rhodesia, British Nyasaland, and German and British East Africa to Somaliland, Uganda, and the Nile. Wherever they have not been severely harassed they have increased largely since the cessation of the epidemic, and though nowhere approaching their old numbers, are yet found in herds of considerable size. On the White Nile and its eastern tributaries, they are, in some places, very numerous indeed, and in the southern part of German East Africa spots exist which sportsmen who have been there speak of as having been literally swarming two or three years ago. In Uganda the animals have been struck off the protected list, as, owing to their reputed bad character, and the fact that the natives seldom attack them, their special preservation has been considered undesirable.

In north-western Rhodesia, three years after the passage of the rinderpest epidemic, buffaloes were confined to one or two isolated localities. In the neighbourhood of the middle Zambezi the writer at that time saw no signs whatever of them, but the piles of bones and skulls, encountered on nearly every day's march, clearly indicated how numerous they must once have been. Places might be seen where a whole herd of as many as two hundred animals had died within a few acres, and probably within a few hours. The country was a veritable Golgotha. About the same time Major Gibbons encountered a few on the Kwito river, some hundreds of miles to the west, but apparently in but small numbers. In British East Africa the Athi Plains are said once to have been covered with the species, though at the present day, except in one or two isolated places, it is never met with.

Mr. Selous has probably said the last word upon the habits of this animal, so far at least as south Africa is concerned. I have noticed quite young calves in the Transvaal Game Reserve in September, and near Gondokoro on the White Nile, there were a large number of young animals, about two months old, seen in December.

The risk involved in hunting buffaloes as compared with that incurred in the chase of other dangerous animals has been much discussed by all authorities, and the conclusions vary according to the experiences of the individual. Personally I have had a good deal to do with the preserved herd in the Game Reserve, and though often walking close to, and in fact practically amongst them, never found them to betray any feeling other than curiosity. When wounded and followed up, a buffalo is of course a dangerous creature to take liberties with. He is extraordinarily tough, and probably more determined and plucky than any other wild beast

except the little ratel; so that when he does charge, the sportsman must make up his mind for a fight to a finish. A wounded buffalo will hunt a fugitive as a terrier does a rat. Animals smarting from old wounds are as dangerous as those newly injured by the hunter himself. An instance of this occurred in the Sudan last year. A sportsman was following up an elephant, and had just fired several shots; when, hearing a couple of grunts on his right, he swung round in time to see a big bull buffalo coming straight at him through the long grass. Fortunately he retained his presence of mind, and dropped it with a lucky bullet from the heavy rifle he was carrying. On examination it was found to have a round lead ball lodged in one jaw, where an abscess had formed; the tip of one horn was shot away; and, most remarkable of all, the iron head of a spear was firmly embedded in the frontal boss of the horns. Some native attendants, who had been sent out to "spy" for the elephant, reported that the buffalo had charged and "treed" them, standing sentry underneath, until the reports of the rifle were heard, when it immediately left them and headed straight in that direction. I saw this head with the embedded spear, myself, when at Mongalla in December. How the spear get there nobody knew, but it seems likely that it had been weighted, and set in the form of a trap, overhanging some game path, a not uncommon native device. A charging buffalo sticks his nose straight out, so that the sweep of the horns covers his shoulders and there is very little chance of an instantaneously vital shot, the only one that will stop him when he means business. He keeps his eyes open watching his enemy, and lowers his head only at the very last moment. Buffaloes are seldom found at any great distance from water, and drink twice within twenty-four hours, usually after dark, and again about sunrise. They feed during the night, and spend the hot hours of the day lying down in fairly shady places, the whole herd concentrated in a comparatively small space. The most characteristic sound of the animal is a rumbling grunt; but when dying, a moaning bellow, two or three times repeated, is uttered, and calves seem to bleat upon occasions in the manner common to those of domestic cattle.

Hippotraginæ

The sub-family is distinguished by the presence of horns in both sexes, the absence of antorbital glands, and the small rhinarium, or bare space on the muzzle. There are four mammæ. It includes the

typical genus *hippotragus*, composed of two existing and one extinct species, and the *genus oryx*, of which three distinct species are usually recognised.

The Sable (*hippotragus niger*).—If the sable antelope must take second place to the kudu in grace and beauty, there is still a fearlessness and pride in his bearing lacked by the latter, and his magnificent scimitar-like horns, together with the brilliant contrasts of rich brown, black and pure white in the coat, render him, in the opinion of many, a close rival.

At the present time the sable is found in the northern Transvaal bush country from west to east, being very numerous in the Game Reserve, but not existing south of the Crocodile River. It further extends through Portuguese territory south of the Zambezi, and is still fairly abundant in parts of southern Rhodesia, western Bechuanaland, German West Africa, and Portuguese Angola. In the Batoka plateau of north-western Rhodesia the animals are celebrated for the size of their horns, and are, or were, very plentiful; thence the extension continues through north-east Rhodesia and Nyasaland. North of these territories the species becomes rarer, and the horns of dwindling size. Its most northerly range appears to be the coast belt of British East Africa, whence the trophies obtained are relatively poor.

The sable is gregarious, being found in herds varying from eight or ten, up to forty or fifty individuals. He is to a great extent, though not entirely, a grass eater, and prefers thin forest country, interspersed with alternate thickets for shade, and open vleis for grazing. He is a regular drinker, and is seldom found more than a few hours from water of some kind.

In south-east Africa the calves are born for the most part in January and February, the period of gestation being about 270 days. The calves, like the females, are of a reddish colour and contrast strongly with the males, though females darken perceptibly with age, and old ones sometimes appear nearly of the same hue as the other sex. The bulls fight desperately during the mating season, and in these duels the wounds from their long sharp horns constantly prove fatal to one or other of the rivals. The male sable is, in fact, a fighter to the backbone; when wounded, and brought to bay, he usually lies down, and covering every portion of his body with lightning-like sweeps of his long horns, deals out certain death to any rash dog which may approach within their reach. Herbivorous wild animals seldom attack individuals of another species with serious intent, but

a few years ago one of the rangers came upon a kudu bull newly dead, with a severe horn wound in the abdomen. The loose sand around was so ploughed up that it was impossible to distinguish spoor, but no other kudus were seen in the vicinity, and a solitary sable bull was started out of a thicket less than a hundred yards away from the place.

In captivity sable bulls generally become exceedingly vicious and dangerous when they have reached a certain age, and it is ordinarily unsafe for a stranger to venture into an enclosure where one of these creatures is confined. Young males are usually found associated in small troops, but old bulls driven from the herds often appear to prefer complete solitude, and to disdain the society of animals of other species as a protection. Many fall victims to lions, but there have been occasions when even these terrible cats have succumbed to the sweeping thrust of the sable bull's horn.

I have never found the remains of full-grown male sable antelopes killed by any species of carnivora except lions, and, excepting for the incident personally witnessed by Mr. Selous, had never heard of even hunting dogs venturing to attack them, until quite recently one of the rangers reported having seen a pack of these creatures chasing a single sable. A native policeman said he saw two sable cows at bay to a pack of wild dogs in a pool of water. It must, I should think, be a very rare occurrence, and when, having found escape impossible, he turns on his pursuers, they must fare nearly as badly as domestic dogs. Courageous as he is by nature, he is never, in a wild state, aggressive towards man; though the Transvaal magistrate who, not long since had to deal with the subject, appeared of a contrary opinion. In a case brought into court, a gentleman charged with shooting three sable antelopes (which are Royal game) without a licence, and out of season, stoutly maintained that the animals successively charged him, and that he was obliged to shoot them in order to save his life. He received the benefit of the doubt! When alarmed they utter a succession of resonant equine snorts, which is the only sound I have ever heard them make.

The Roan (*hippotragus equinus*).—This species has a wider distribution than his cousin the sable antelope, but is seldom found in troops exceeding ten or twelve individuals.

Roan antelopes are spread over most of Africa south of the Sahara, and four sub-species are recognised. They naturally favour rather upland, rolling country, not too thickly wooded—such as, in the Transvaal, is known as middle veld—but when persecuted take

readily to forest, and are then met with in the same sort of surroundings as the sable. The roan fully shares the pugnacious qualities of his relative, than which he is a larger and more heavily-built animal, standing over fourteen hands at the shoulder, but his horns have not the same majestic sweep, and at a distance they even catch the eye less than the great tufted ears.

The roan is a grass eater, and drinks regularly. The snort uttered when alarmed is similar to that of the sable. The young are very similar in colour and appearance to those of the latter, and though even in very early youth the face markings are slightly different, the resemblance is sufficient to indicate a common ancestor of which the sable is the more specialised descendant.

The majority of calves are born, so far as south-east Africa is concerned, from about the third week in January to the end of February, and the period of gestation is about the same as that of the sable.

Although never associated in the large herds characteristic of the last-mentioned animal, the distribution of the roan is so very much wider, and the number of small herds spread over any locality where the species is plentiful often so numerous, that the total number in Africa is probably largely in excess of the total number of sable. Old hunters and natives say that formerly in the eastern Transvaal roan were very numerous in the middle veld, and in the semi-open country about the foot hills of the Drakensberg, while rarely encountered in the bush country proper. Continual shooting exterminated the majority of the species, and apparently drove the survivors to seek an environment not really natural to them: for in the early days of the game reserve they were found living in quite thick bush, which within the last six or seven years they have been gradually abandoning for the more open country under the hills, where they may now be seen in considerable numbers.

The most southerly representative of this group was the blaaubok or bluebuck (*hippotragus leucophæus*), formerly existent in the Cape Colony, but exterminated by the settlers more than a hundred years ago. Five museum specimens exist in Europe—at Paris, Vienna, Stockholm, Leyden, and Upsala.

Genus *oryx*. The Gemsbuck (*oryx gazella*).—The gemsbuck is the only example of the oryx group found in south Africa, and more than one thousand five hundred miles intervene between the northernmost limit of his range, and the most southerly habitat of the next species of the genus, namely, the *oryx beisa callotis* of German East Africa. This is, therefore, another remarkable example of immense areas

separating two species of the same genus, areas which are neither inhabited by a single representative of either at the present day, nor bear any indication of having been so within recent times.

The gemsbuck is now confined to the extreme north-west of the Cape Colony, Bechuanaland, German South-West Africa, and the southern part of Angola. He is fairly numerous in the Kalahari Desert, and maintains his security, alike from hunters and carnivora, owing to his independence of water. Like the eland, but in still greater measure, he seems to be able amply to quench his thirst from the moist tubers and roots which he smells out and unearths, He is a massive and handsome antelope, of great pugnacity and courage, and his long straight horns can be used upon occasion with considerable effect.

Gemsbuck are typical desert animals; they favour a quite open country, or one covered only with small stunted bush. They are generally found in small troops. Mr. Selous records fifteen as the largest number he ever saw together.

The Beisa (*oryx beisa*).—The beisa is geographically the next species of the oryx met with, and is divided into two varieties, the *beisa callotis* of the Kilimanjaro district, and the typical sub-species, which extends through British East Africa, Somaliland, and the Sudan, east of the Nile, as far north as Suakin. These oryxes associate in much larger numbers than is the custom of the gemsbuck, and are sometimes found in herds of as many as fifty. The period of gestation is from eight and a half to ten months.

The White Oryx (*oryx leucoryx*) is found to the west of the Nile, and thence across the continent nearly to the west coast. It is an essentially desert animal, and, like the gemsbuck, apparently associates in small parties.

The Addax (*oryx leucoryx*).—The addax is distantly related to both the oryxes and the roan and sable antelopes. It stands about forty-two inches at the shoulder, and is of a pale sandy colour, admirably matching the desert wastes in which it lives. An inhabitant of northern Africa, it extends into the Ethiopian region as far as seven or eight degrees north of the Equator, and, living far away amid the waterless sandy desert, is therefore extremely difficult for the European to reach, and so very few have been killed by white hunters.

Bubalinæ

These are antelopes of large size, with high withers and sloping quarters; the antorbital glands are small, the nostrils large, with a

Blesbuck Ewe with newly-born Lamb.

Gemsbuck Cow with Calf.

well-developed rhinarium, tail long and tufted, false hoofs large, and two mammæ. The faces are peculiarly long and melancholy looking, and horns are present in both sexes. They are divided into three genera—*bubalis*, which contains the true hartebeests, *damaliscus*, consisting of the so-called bastard hartebeests, and *connochaetes*, formed by the gnus or wildebeests. In the true hartebeests the peculiarities of the genus are very marked. The horns are heavily ringed for a great part of their length, and more or less sharply twisted back about the middle. Eight species are recognised in the Ethiopian region.

The Cape Hartebeest (*bubalis caama*).—Once existing in immense numbers in Cape Colony; now found in the more remote north-western districts as far as Lake Ngami, also in Bechuanaland and the north-west of the Transvaal.

Lichtenstein's Hartebeest (*bubalis lichtensteini*).—Seldom found south of the greater Sabi River, thence through Mashonaland and Portuguese East Africa to the Zambezi. North of this river the species extends through Moçambique, Portuguese and British Nyasaland, the whole of northern Rhodesia as far west as the Zambezi valley to German East Africa, towards the north of which territory its place is taken by the next species.

Coke's Hartebeest (*bubalis cokei*).—Extends from German East Africa, through British territory as far north as Lake Rudolph, but is not found west of the longitude of Lake Naivasha.

Neumann's Hartebeest (*bubalis neumanni*).—This is a very local species, showing approximations both to Coke's and Jackson's hartebeests. It is found to the north-east of Lake Rudolph, and also between Lakes Nakura and Baringo in British East Africa.

The Lelwel Hartebeest (*bubalis lelwel*).—The typical race of this species inhabits the Bahr-el-Ghazal, and thence exists along the west bank of the Nile, northwards. It has a dark face blaze. The second race (*b. l. niedecki*) has no face blaze, but I do not agree with some writers that the tips of the horns are always either parallel or slightly inclining inwards, having shot several specimens in which they were inclined at a wide outward angle. This species is found all along the east bank of the White Nile as far south as Lake Albert. In the highlands of Uganda the local race is distinguished by accentuated face and body markings, which vary considerably in individuals, and, in the more pronounced cases, cause it to have some resemblance to the Cape hartebeest. This variety has been called *b. l. insignis*. Lastly the *b. l. jacksoni*,

or Jackson's hartebeest, inhabits British East Africa north and west of Lakes Nakuru and Baringo.

Swayne's Hartebeest (*bubalis swaynei*) is an inhabitant of Somaliland, and the north-eastern part of British East Africa.

The Tora Hartebeest (*bubalis tora*) is found in Abyssinia and the Blue Nile Valley.

The Western Hartebeest (*bubalis major*).—This is the typical hartebeest of Senegal, Nigeria, and other parts of west equatorial Africa.

From the above digest of distribution, it will be seen that the various races of hartebeest cover a very large portion of the Ethiopian region, and are represented by more distinct types than almost any other animal.

Hartebeests present everywhere the same general characteristics. They are large ungainly looking creatures, with long "fiddle" faces; they seem to labour in their gallop, and it is only when there is some means of practically testing their speed that it is realised at what a tremendous pace they can actually move. They are naturally rather inquisitive and stupid, being therefore easy animals to shoot when unused to being much disturbed. They are found either in open forest country or in treeless plains. Just as in past days the Cape hartebeest crowded the high veld of south Africa in vast herds, so now the Coke hartebeest may be seen in his thousands upon the Athi Plains of British East Africa, sometimes combined in considerable troops, at others mixed impartially with gazelles and zebras. Hartebeests are essentially grass eaters, and they like to drink regularly. In south-east Africa the calving time is coincident with the earlier part of the summer, but in equatorial countries the period may be less regular. In British East Africa, the Coke are said to drop their calves without great regard for season. I personally saw a great number of newly-born animals on the Athi Plains, during September. On the east side of Lake Victoria, some Jackson hartebeest cows appeared to be heavy in calf at the end of October, but I saw no young animals, either there, or amongst the few troops of the *insignis* variety which I encountered in Uganda, up to the middle of November. On the White Nile, the cows all seemed to be calving during December, and I should be inclined to believe—though it is dangerous to dogmatise when observation has been merely of a passing nature—that this represented a fairly normal and regular state of things. In south-east Africa the Lichtenstein hartebeests appear to calve early in the summer—October or November. The young are carried for about eight months.

Genus *damaliscus*.—In these antelopes the shape of the face is more normal, and the horns have a lyrate curve, devoid of the sharp twist, characteristic of the true hartebeests. The species recognised are five in number, and are as follows:—

The Bontebuck (*damaliscus pycargus*).—This antelope was once spread throughout the south-west portion of Cape Colony, and was no doubt always a very local variety, being, in fact, merely a specialised type of the more widely distributed blesbuck. So closely in fact do the two animals resemble each other, that the early hunters often confused the species, though it seems pretty certain that their habitats were really widely separated. At the present day the range of the bontebuck is confined to the vicinity of Cape Agulhas, the most southern extremity of Africa, where a few hundred are carefully preserved on the farms "Nachtwacht" and "Zeekoe Vlei" owned by Messrs. Albertyn. Formerly they were the property of Messrs. Van der Byl and Van Breda, to whom belonged the credit of originally preserving the species from extinction.

The Blesbuck (*damaliscus albifrons*).—Formerly existed in immense numbers on the plains of the north-east of Cape Colony, the Orange Free State, the Transvaal, and eastern Bechuanaland. Though reduced to a mere fraction of its ancient total the species is in no present danger of disappearance. This is due to the fact that herds are now preserved on a great many farms in the two first mentioned Provinces of the Union; but being confined within large fenced areas, and regarded by the farmers in much the same light as sheep or cattle, they can no longer be looked on as strictly feral. The gestation period is seven-and-a-half months.

The Tsessebe or Sassaby (*damaliscus albifrons*).—This is a larger animal than either of the two preceding species, attaining a shoulder height of about twelve hands, and weighing some 300 pounds. The range of the tsessebe extends through southern Rhodesia westwards to north of Lake Ngami, and eastwards through the north-eastern Transvaal, Gazaland, and Portuguese East Africa generally, south of the Zambezi. The Inkomati River, which is formed by the union of the Crocodile and Komati Rivers, at the Transvaal-Portuguese boundary, appears to be its southern limit. The species spreads over all the country to the west of the Zambezi, across the Kwando and into Angola. East and north of the former river it appears to be much less numerous, and is said to be met with in but one place in north-east Rhodesia where, however, its

horns exceed in size those of its kind from other parts of Africa. It is not found at all north of ten degrees south latitude.

Tsessebe are grass-eating antelopes, favouring rather open, and fairly flat, country ; never hills or thick jungle. They have, however, a partiality for shady patches of bush or forest, wherein they may shelter themselves during the hot hours. The troops are small, seldom, if ever, composed of more than ten individuals, and oftener family parties of from three to six only are seen. The main calving time is from the end of September to the end of October in the Transvaal, but a newly-born calf was once seen at as early a date as September 1st, while quite little ones have been met with as late as the beginning of December. Though it is never safe to be dogmatic in these matters, it seems fairly certain that the calving time of tsessebe is at least two months earlier than that of most other large antelopes in south-east Africa. The young animals are pale chestnut in colour.

The tsessebe has the reputation of being the swiftest of all south African antelopes. Like his cousin, the hartebeest, he moves off at a lumbering canter, going " on his shoulders " and looking the *ne plus ultra* of awkwardness, but if badly scared, or pressed, he can lay himself out like a racehorse, and move at a pace which defies the efforts of the best shooting pony to rival. He is on the whole rather a confiding, slow-witted animal, often beset by a fatal curiosity. When alarmed he snorts, and when dying, almost always groans in a very characteristic manner. Single tsessebe bulls are often found attached to troops of other species, notably wildebeest and zebra. The hoof is very large for the size of the animal.

Damaliscus corrigum.—Topi, Tiang, and Korrigum, are names applied to this species, which is the northern representative of the tsessebe, and which, through a very wide range, varies sufficiently to have acquired slight local differences. It is spread from Senegambia and the interior of west Africa, through the Sudan, to the valleys of the Upper Nile and Congo, and thence to British East Africa, where it is found in great numbers locally, though large areas seem entirely avoided by it. It apparently does not range for more than a couple of degrees or so south of the Equator. In general habits it appears to be not very dissimilar from the tsessebe, though seemingly at times more gregarious. The calves are very similar in colour to those of the latter, and I saw a good many not yet old enough to join the herds, near Muhoroni to the east of Lake Victoria, at the end of October.

Hunter's Hartebeest (*damaliscus hunteri*) is an inhabitant of

A Herd of Blue Wildebeest in the Eastern Transvaal.

southern Somaliland, and has outwardly little in common with the other members of the group. The colour is rufous fawn; there is a white forehead chevron, and the horns, which are heavily ringed, and average about twenty-five inches, resemble those of an impala, rather than of a hartebeest.

Genus *connochætes*.—This genus contains the gnus, or wildebeests, as they are more commonly called in Africa, of which there are but two distinct species; though the local varieties of one of them (*taurinus*) differ considerably in the matter of face chevrons, and the east African form is distinguished by having a white beard, which has imposed upon it the sub-specific term of *albojubatus*.

The White-tailed Gnu, or Black Wildebeest (*connochætes gnu*).—This antelope was always confined to the high upland plateaux of south Africa, from the northern part of Cape Colony to the southern part of the Transvaal. He therefore suffered the fate to which wild animals inhabiting a settled country, sooner or later, are doomed, and was exterminated throughout the greater part of his range. Fortunately, however, several farmers of the Free State, possessed of greater foresight than is usual amongst pioneers in a new country, began, many years ago, to preserve small herds upon their farms, and before the late South African War these existed in several isolated districts. Contrary to the prevalent idea, that the war spelt the fate of the relics of the high veld fauna, it had, in fact, quite the reverse effect. It is true that a few more wildebeest, blesbuck and springbuck were killed by Boers than perhaps would have been shot under ordinary peace conditions, and that a still smaller—in fact, a quite negligible quantity—fell to the British; but such destruction as took place was more than compensated for by the breaking down of fences and farm enclosures, and the scattering and driving of the preserved herds of game all over the country, especially when the big sweeps of troops took place over the Free State towards the conclusion. The effect of this was everywhere the infusion of new blood, and the dissipation of the danger of deterioration by in-breeding, with which long confinement on the same farms threatened the isolated herds. The fact that black wildebeest and other game have not for years been in so thriving a condition as they are now, and that many farmers of the Free State who had no buck on their land before, now possess herds, speaks for itself.[1] The

[1] Mr. R. T. Coryndon paid a visit to the farm "Kameeldoorns" (Orange Free State) in June, 1911. He writes that on that and the neighbouring farm—"Langkuil"—were 1,800 black wildebeest, 6,000 blesbuck, and about the same

number of black wildebeest believed to exist in 1907 was considerably in excess of that before the war, and if the present enlightened opinions continue to prevail among south African landowners there is no reason to have any fear of the species becoming extinct. Certainly, any such entire disappearance would be a serious calamity to the zoological world, for undoubtedly there is no more remarkable beast, either in appearance or manners, upon the whole face of the globe than the white-tailed gnu. His extraordinary antics and capers formed a constant theme for anecdote among the early pioneers and hunters, and his aspect impressed even the least imaginative of them. Even in these latter days of general omniscience, he can still excite surprise when first beheld, as is evidenced by the excited "copy" sent to his paper by one of the smart young men dispatched to Portsmouth to meet a regiment returning from South Africa after the war. "A new animal," he wrote, "was brought home by these gallant fellows—the most extraordinary beast. It has the head and horns of a cow, the mane and tail of a horse, and the body and legs of a deer. I did not discover what it ate, but it is called 'the wild beast'!" Really, not a bad description.

The Brindled Gnu, or Blue Wildebeest (*connochætes taurinus*).—At the present time the blue wildebeest is found along the eastern borders of the Kalahari desert, northwards from the Malopo River, in German South-West Africa, Angola, Ngamiland, southern Rhodesia, the Transvaal low country, Portuguese East Africa, and Amatongaland, where about three thousand were said to exist a few years ago. North of the Zambezi, it is spread all over Rhodesia and Nyasaland, and thence, through German and British East Africa, to about the latitude of the Equator, which seems to form about the northern limit of the species. The brindled gnu has, therefore, a very extensive range, and is, moreover, found in very large numbers throughout a very considerable portion of it.

Blue wildebeest prefer open rolling country, interspersed with thick thorn or other bush, to which they can retire for rest and shade during the day. Sometimes, however, they remain in the open, and then choose the middle of a completely bare space or plain, where they can see all round for some distance. The herd nearly always

number of springbuck. One morning there were, on a reserved part of "Langkuil," about 1,500 wildebeest, 2,000 blesbuck, and 1,500 springbuck within a mile of his cart, all on bare veld, the herds mixed together, feeding and playing. "Langkuil" is the property of Mr. Jan Delpoort.

Blue Wildebeest in Thick Bush.

lie down to sleep and chew the cud on these occasions, one vigilant old cow remaining standing as sentry over her companions. At night, which is, of course, their principal feeding time, they favour open patches or glades, probably as a safeguard against being stalked successfully by lions. Normally they drink about sundown, and in the very early morning before dawn, though in cold weather sometimes as late as midday, and in going to and returning from water they always follow their own special paths. They are grass-eating animals, and their favourite feeding grounds are often ploughed up by their hoofs, while the pasture is eaten very short. They are very partial to dry sand wallows, and these hollowed out circular rolling places are certain indications of favourite resorts of a herd. Each troop appears to have its own well-marked feeding ground, and is seldom found far away from it while pasture remains, except on its journeys to and from the water. One herd in particular in the Transvaal Game Reserve is always to be seen near the road about the same place, and I have watched it increase from eighteen to sixty individuals in the course of years. Any infringement of grazing rights appears to be strongly resented, and I was once witness of a most interesting episode, when the herd bull of a certain troop chased a party of invaders back on to their own ground on the other side of a small stream, returning quietly to his own party so soon as his duty was done. Not the least remarkable phase of the incident was the sense of wrong-doing exhibited by the trespassers, who displayed not the smallest tendency to offer any resistance.

Blue wildebeests are hardy and courageous animals, and fight gamely when at bay. The present writer had an experience of this trait once in Barotseland, when, having foolishly walked up to one with an empty rifle and no cartridges in the belt, as it was lying wounded on the ground, it suddenly sprang to its feet, and, its eyes flashing fire, made a most determined charge. The natives with the ammunition ran for their lives, and the writer was lucky enough to be able to dodge behind a convenient tree. The poor beast, however, could only come a few yards and then fell, spent. When accompanied by small terriers—which, devoid of all sense of proportion, generally rush headlong at any animal they see—it is sometimes very amusing to watch, from a place of concealment, their contest with a few of these brindled gnus. As the little dogs rush in, barking as only such small canines can, the big shaggy beasts, at first taken by surprise, dash off in their own inimitable

fashion; but, presently, recognising the insignificance of the foe, they come wheeling round in a cloud of dust, and the chase is reversed. Away go the dogs, and hard on their heels come the wildebeests, vainly trying to reach them with horns and feet. Then, unsuccessful but contemptuous, they pull up and snort their disgust, only to find themselves assailed in rear; and so the play goes on, until at last the dogs, finding the matter becoming a little too serious, run in for protection, and their pursuers, suddenly catching sight of us, are off in a moment. I have never known, in my own experience or in that of my staff, the full-grown wildebeest to be attacked by any carnivore but the lion, except on a few occasions by the little ratel, or honey badger, as will be related in another chapter. Some writers have recorded onslaughts by hunting dogs, but I am of the opinion that such incidents must be rare, and undertaken only by urgent press of circumstances. I think, at any rate where less formidable species are present, full-grown blue wildebeests are immune from all carnivorous animals except the lion. Sick or wounded, they would, of course, fall a prey even to the hyæna, but when in full health and assailed by wild dogs, the adult blue wildebeest would probably act, when at bay, much as he often does with domestic dogs—that is, he would get his hindquarters well jammed into some thorn bush, to obviate attack from behind, and keep his enemies at bay with lowered horns and stamping hoofs. Wild dogs seldom attack in front, but prefer to get their victim on the run, when, without risk to themselves, they can tear its flanks open. I once owned a big boarhound which ran in and pinned by the hock a half-grown wildebeest bull which I had wounded; but I think, had I not come up quickly, that it would have gone hard with the dog.

When undisturbed, and calling each other, blue wildebeests utter a peculiar and resonant "kwank," which may be heard most often in the early mornings, when the herds are collecting after the night's grazing. The alarm note is a series of hoarse snorts, while during the mating season the males may be heard bleating like big goats. Generally speaking, they are less habitually silent animals than are the majority of antelopes. They are sociable creatures, and are not only often found in very large herds where free from persecution, but are frequently associated with other animals, notably with Burchell's zebra, for which they have apparently so strong a friendship that the individuals of the two species are often found grazing mixed up together; though, on the alarm being given, each draws away to the companions of his own type. Bulls are sometimes met with solitary,

Blue Wildebeests in Forest (North-eastern Transvaal).

Blue Wildebeests in the Open (North-eastern Transvaal).

but more often, in south Africa, attached to herds of zebra, impala, tsessebe, or waterbuck, less frequently to sable antelope, and on the occasions when I have noticed this, the wildebeest seemed to keep at a respectful distance from his hosts.

On winding or catching sight of a man, a blue wildebeest will stand stock still, staring for a very considerable time. Then, giving his long tail a preliminary whisk, he springs round abruptly on all four feet and dashes madly away—as often as not in a semi-circle—for twenty or thirty yards, his tail up and his head down—the rush varied by occasional violent shies and swerves, as if he were practising the evasion of some lurking enemy. Then, with the same abruptness with which he set off, he comes to a halt, his tail swishing. A shorter stare, enlivened by a little pawing, curvetting, and many snorts, followed by another short dash—a process repeated two or three times—when he generally makes off at a lumbering canter until out of sight. Occasionally, when tame through long immunity, wildebeests will actually follow a man, especially a mounted one—dashing up to and past him at thirty or forty yards distance. They are always, however, much bolder if they have not caught his wind.

In the eastern Transvaal bush country the calving time is very regular, from November up to the end of December. During several years the first newly-born calves were always noted within the last week of November and the first week of December. These were probably the calves of the older cows, the heifers having their young ones later in December; but, so far as has been noticed, the season is over before the commencement of January. On the Batoka plateau of north-western Rhodesia I have seen many young calves about the third week in October, and they have been noticed about the same time in the open country, on the west border of the Transvaal Game Reserve, since protection has induced the wildebeest to return thereto. In the latter area the young grass sprouts at least a month earlier than in the bush country, and this probably has a corresponding influence on the calving period. The calves bleat much like those of domestic cattle, and, like those of most other ungulates, are concealed in bush or grass until strong enough to join the herd. One day, as my ox-waggon was nearing home, a little wildebeest, not more than a day old, jumped out of its form close by, and came running and bleating towards the stolid oxen, evidently taking one of the leaders for its mother. The period of gestation varies between eight and nine months.

As bearing on the courage and pugnacity of brindled gnu, a incident which occurred in the game reserve may be worth relating One of the rangers, while riding across a wide plain which separate two streams, seven or eight miles apart, came upon the dead body o a crocodile about eight feet long. It was very much decomposed and therefore impossible to tell what had actually killed it; but th ground all around it was torn and ploughed up with wildebees tracks, and, in the ranger's opinion, they had either surprised th reptile on one of the overland night pilgrimages, which thes creatures often make from one water to another, and stamped an gored him to death, or, supposing him to have died from some othe cause, they had vented their rage on his dead carcase. It is, o course, impossible to be sure what did actually happen, but ther seems no particular reason why they should not have killed hi under the circumstances.

CHAPTER VIII

ANTELOPINE AND CEPHALOPHINE ANTELOPES

ANTELOPINÆ

THE Impala (*æpyceros melampus*).—Given its scientific name by the celebrated traveller and naturalist, Lichtenstein, more than a hundred years ago, and variously termed impala, pallah, and rooibok, this antelope may claim to be one of the most beautiful and graceful members of the existing African fauna. In south Africa it is sometimes referred to as "the springbuck of the low veld"; a designation well deserved, since in its extraordinary leaping powers it certainly equals, and possibly surpasses, its high veld cousin.

Its general colour is a bright chestnut, paling to delicate fawn along the sides, and becoming pure white below; the limbs are clean and slender, and the hind legs have attached to the lower back parts of the cannon bones very distinctive brushes of dark brown hairs, surrounding a gland containing an oily secretion. On either side of the tail extends a narrow elliptical dark line, similar, except in colour, to that present in the common waterbuck (*cobus ellipsiprymnus*). The partisans of protective and purposeful colouration maintain that this, in common with the white patches under the tail, found in so many wild animals, must have evolved in order that individuals of species might recognise each other, and that, when dashing at full speed through the bush in single file, the task of following the leader might be facilitated. The opponents of the theory, on the other hand, point out that smell and not sight is the sense made use of in such matters, and that in any case colours would be ineffective at night. The average height of the males at the withers is some thirty-four inches, and their beautiful lyrate horns reach, in south Africa, a length of about two feet round the curve, while in east Africa they often exceed this by six or seven inches. In northern Rhodesia and Nyasaland, on the other hand, the heads are generally smaller than in the south. It is remarkable how this variety in size tends to occur locally amongst certain species of the game; were it due to the influence of climate, it might be expected to affect all types in even

degree; but some east African species are seen to carry heads of lesser, and certain Rhodesian forms of greater dimensions, than their south African prototypes. Local influence no doubt counts for something, for the impalas found on the stony slope of the Lebombo Hills, in the Transvaal Game Reserve, attain, in common with other species there, to a greater length of horn, and a heavier bodily weight than their brethren habitually resident in the flat bush country. Impala females are hornless, and greatly exceed the males in number.

There is no prettier sight than a troop of impala feeding in some open glade of their favourite bush, when they fancy themselves unobserved. The rams dotted here and there amongst the preponderating numbers of the other sex, pick their way daintily along, their heads erect, their chests puffed out, and their whole bearing stamped with the sense of conscious superiority. The females, ever wary and alert for danger, glance constantly around in the intervals of feeding; anon an electric current seems to run through the whole troop: a ewe has started at some imaginary danger, and instantly every other individual thrills in sympathy; every bright eye remains fixed; every delicate ear inclined towards the suspected quarter: a moment of suspense, and the whole settle down again as if nothing had occurred to cause temporary alarm. Sometimes, during the heat of the day, a herd may be seen resting under the shade of some large tree by the river bank. They stand about whisking their tails, and biting at the flies. Suddenly the spirit of movement seizes upon them, and the rams rush round in circles playfully pursuing one another, their tails elevated or even curled over their backs, so that they present, to some extent, the appearance of reedbuck. The more sober ewes stand gravely by; life seems always to them a serious matter, and their constant watchfulness leaves no room for frivolity. This vigilance of impalas is especially noticeable when they are drinking. During the dry months, especially towards the end of the winter, the herds congregate in the vicinity of the perennial streams, satisfying their thirst some three times a day, and never moving far away from the banks in the intervals of drinking. It is no difficult matter for us to conceal ourselves in such a manner, and with such regard for the prevailing breeze, as to be able to study the watering of the herd at very close quarters. We then realise forcibly the dangers which constantly threaten the wild denizens of the bush, and how their existence must be conditional upon their watchfulness.

We have strolled down to the river about 9 a.m. There is so far

Impala drinking.

Impala feeding (North-eastern Transvaal).

no sign of life. The winter sun has not yet gathered strength, and the animals are still quietly feeding within the bush. On our left, the clear river murmurs on its way, sparkling blue in the sunlight; here and there voicing its remonstrance, and lashing itself into foamy anger, as some rocky barrier temporarily impedes its course. Bordering it lie some thirty or forty yards of yellowish brown sand, over which the stream ran deep and strong a few months ago, when summer was with us; its then course testified to by the heaps of rubbish, and derelict tree trunks to be seen at intervals. Here and there shoot up patches of reeds and hardy bushes, which appear to be none the worse from having to lead an aquatic life during nearly half the year. In front of us, and some ten feet higher than the sand, stretches the bank of the river, some fifty yards of open grass gradually sloping up to the edge of the thick thorn bush, which, grim and mysterious, reaches away for many a mile to our right. Where we stand, the grass is all eaten and trampled into dust by the daily passage of hundreds of impala. It is the thoroughfare to the watering place. Following the tracks to the river's edge, we come to a little inlet of shallow water, cut off from the main stream by a bar of stones; all around the sand is churned and trampled by dainty footmarks; this is the drinking place itself, chosen with the cunning of experience, for in Africa no beast may satisfy its thirst many times at a deep pool and escape the lurking demon who dwells there, and is ever on the watch for some unhappy victim. See, within ten paces stands a clump of dense reeds, rendered still more impenetrable looking by the mass of débris washed up against the hither side of it. The very place for an ambush; and we will temporarily supplant the leopard who has long ago discovered that it is an excellent hiding place, whence he can spring out upon his chosen prey. A little manipulation of the natural covert, and a convenient screen is formed, behind which, camera in hand, we may sit or crouch. The breeze blows gently towards us from the bush. And now a large herd of impala is seen on the edge of the latter, slowly emerging and approaching the river. As they come out on the bank above us, they gradually spread out, some resting in the shade, some grazing, nibbling tender shoots, or tops of young reeds; while a few old and experienced ewes keep a sharp look-out towards the bush which they have just left. Quite suddenly a detachment of a dozen or so walk rapidly down to drink: these will be mostly ewes and young rams whose horns have not yet attained the lyrate curve of maturity. Mark how each animal stands as far back from the water as is con-

sistent with being able to touch the surface with the extremity of the nozzle: the weight is thrown back upon the hindquarters; every muscle is braced for an instantaneous spring. Their enemies dwell in the water as well as on dry land, and shallow as the former is at this spot, never for a moment do they take anything for granted. Hardly have the heads been lowered, when there comes a quick snort of alarm, and in the wink of an eyelid every impala is a dozen feet from the water, every sense strained to the utmost; cautiously once more they approach, a few anxious sips, and they depart at the same rapid walk at which they came, to give place to another detachment; and so it goes on until all have satisfied their thirst. An old ram, the patriarch of the herd, usually the last to leave, stands staring steadily backwards for a few moments, before leisurely joining the remainder. Like the others of his sex, perhaps because accustomed largely to rely upon female wit to warn him of danger, he betrays less nervousness when drinking and in the neighbourhood of the water, than is the case with the members of his harem. Now an old ewe has caught sight of something which alarms her, or has inhaled some whiff of tainted air; instantly she turns rigid as a statue, the very symbol of passive vigilance; the danger evidently approaches and, expelling the air sharply through her nostrils, she gives vent to the peculiar snort distinctive of the alarmed impala, a sound pitched in a key higher and shriller than the bass of the larger antelopes. As each member of the herd gets the wind of, or sights, the cause of alarm, he or she, too, joins in the chorus, till the air rings with sound; then suddenly, by one impulse the whole herd, now bunched together, swings round, and all make off with mighty bounds, sailing over bushes, rocks, and ravines, without apparent effort, to disappear into the recesses of the bush, just as a couple of natives round the corner of the path.

It has been customary to catch a few of these antelopes alive each winter, the method being to stretch a hundred yards of deer netting along the edge of the bush, and some fifty yards from the favourite drinking place, and to leave it there until the animals have become thoroughly accustomed to its presence. On the sixth day we sally forth, accompanied by three or four native attendants, and conceal ourselves in some convenient spots in the reeds, a little beyond the trap and on either side of it. We make no sign until a sufficient number of animals are between the river and the stretched net, then on a prearranged signal the natives suddenly spring from ambush and rush forward with shouts and gesticulations. Immediately the herd

dashes straight for the bush; some recollecting, or noticing in time the intervening net, dash round one corner or the other of it, but the majority see it too late for evasion, and leap for safety. And what a sight it is! The net has a maximum height of twelve feet when drawn tight, and seldom sags down at its lowest below ten; it is held in place by stout poles, which are so firmly planted in the earth as to negative all chance of bearing down the obstacle, while it has just enough "give" in it to ensure its not being easily torn or broken. An old ewe is the first to reach the dangerous spot. She dwells in her stride just the slightest shade—there is no such thing as a pause or a "prop"—then rises gracefully, and sails clean over the whole thing in a beautiful curve, alighting on the farther side light as a feather. While she is still in the air, fifteen or twenty of her companions take the fence simultaneously; close behind come others, jumping at all angles, taking off, some nearer and some farther from the net; but all displaying the most perfect grace of movement, and affording one of the most fascinating pictures it is possible to conceive. All are over. No! one ewe, apparently shut in by her companions, jumps short, and in a moment is kicking and struggling in the meshes of the net. Demoralised by the sight, a second one, coming just behind, tries, too late, to stop and turn, but carried on by her own impetus shares the fate of the first. Last of all comes a very young ram, one of the last year's lambs; his horns yet showing no tendency to curve. He has perhaps been standing a little apart from the others, and is rushing madly to catch them up. With the blind impetuosity of youth, he either does not see or totally disregards the frail-looking obstacle in front of him; at all events, he never attempts to rise, but dashes straight into it. The whole net trembles from end to end with the shock and bulges far out from the weight of the animal, which in a moment is hopelessly entangled, held by feet and horns alike. With the exception of the three captives all are now safely over and are disappearing in the bush, still leaping and bounding high into the air, as if there were other barriers to progress to be encountered. Our enjoyment of the spectacle, generally, must not blind us to detail. Observe how, in springing, the fore legs are gathered up under, and close to the body, until the moment before alighting; while the hind ones, soon after leaving the ground, are extended at full length behind, so that, while in mid air, the animal is in the form of a perfect arc, and sometimes alights in an almost perpendicular position. There is no obvious effort in the jumping of an impala, such as is noticeable in a horse's

leap; he seems to float through the air with graceful undulations, entirely different from the rubber-ball-like action so characteristic of the springbuck. He is indifferent as to whether he leaves the ground from a stand, or when going at full speed, and there is always a distinct dwell between each mighty bound. But the natives have now hurried up to the net, and are busy extricating the prisoners before their struggles shall have done them any serious harm. Once touched by human hands, they seem to abandon all hope, and surrender themselves completely to their fate, submitting almost without resistance to have each pair of legs, as it is extracted from the meshes, firmly strapped together. It is a bare 400 yards to the station, and three men are sufficient to carry each animal to the enclosure already prepared there. One supports each pair of legs, while on the third devolves the important task of keeping the antelope's head elevated: a precaution, which, if neglected, results in the cud blocking up the respiratory tubes, and choking the animal to death. We may now form some idea of the leaping powers of impalas by an investigation of the footprints round the net. As stated, the latter is nowhere much less than ten feet in height, and near the supports fully twelve, and yet, given a fair chance, not one animal so much as touched it. Some have taken off close up to it, and curved neatly over, others—probably the older rams—have risen two or three yards before coming to it and alighted far on the other side. What higher tribute to the powers of an animal which measures but eight-and-a-half hands at the shoulder can be required, and how many trained horses of twice the height could emulate the feat? Provided that the antelopes are released quickly from the net, this form of capture is unattended by much risk; in fact the only accidents we have had were in one or two cases of stray animals which, at various times, managed to get caught while no one was present, and thus injured themselves, and in early days, before the importance of holding up the captive's head while being carried was appreciated. Of course, all catching of wild animals must be attended by a certain waste of life, however well thought out have been the precautions to obviate it, and all that can be done is to reduce that inevitable waste to as small dimensions as possible. By the time we reach home, the three captives—two full-grown ewes and a young ram—have been released in the compound prepared for them. In deference to their jumping capacities, this is enclosed by poles set close together, and of a height prohibitive even to impalas. There is room between each for the animals to look through, and so

become accustomed to the life of the station; and, having seen that a plentiful supply of food and water has been provided, we withdraw, giving strict orders that no one is to either enter the enclosure, or to pause outside to stare at the animals. The best way to instil confidence at first is to take no notice whatever while passing and repassing. At present they are standing huddled up in one corner of the enclosure; but on visiting them in the morning we see that they have both eaten and drunk, and each successive day finds an improvement in this respect and a larger degree of equanimity. Full-grown females, and males up to at least one year old, soon become tame in captivity, and at the end of about a couple of weeks, will readily accept food from the hand through the fence. One ram of about ten months old would jump backwards and forwards over a stick held out in front of him, the height of which was gradually raised, until he would readily take the leap at the level of a man's extended arm. Old males, on the other hand, when captured, do not readily become reconciled to new conditions, and often savagely attack their companions in captivity. On the morning following the capture of a full-grown ram, it was found that he had both gored and trampled the two young males and the ewe which had been shut in with him. Once confidence in man has been established, the animals are not easily upset. We have found that after a month or two of care and attention at the station, the twelve hours' journey on a railway trolley to Komati Poort, followed by some twenty-four hours in the train to the farm or zoo for which they were designed, amidst continual bustle and noise, hardly affected the animals at all, either in appetite or condition. The boxes used for travelling on these occasions must, of course, be well padded, and so narrow as to support the animals, and prevent their being jolted about from one side to the other. They should be like miniature horse boxes: having a grating and a feed trough in front.

When pursued the impala is capable of moving at a great pace, and the manner in which he gets through the densest bush without decreasing it is wonderful, though, owing to his preference for this kind of surrounding, it is difficult to estimate what his speed would be in open country, relatively to other animals. Perhaps no antelope possesses more natural enemies, and, therefore, nature has bestowed on the species a remarkable capacity for increase, and on the individuals a rare hardiness and tenacity of life. On one occasion a ram was noticed apparently caught by the horns in a bush. When approached it made no effort to move, and examination showed that

it was in a partially stunned condition from having charged into the stem of a tree when going at full speed. It was secured and carried unresisting to an empty cattle kraal, where it lay for three days alive, but never fully conscious. On the evening of the third day it died, and a post-mortem investigation revealed the fact that the top of the skull was broken into fragments, the two horns, with a little piece of bone at the base of each, being held in place merely by the skin and membranes. A blow such as this would in all probability have killed a human being on the spot. At another time a ewe was observed running with a herd, feeding, and apparently unhampered in her movements, notwithstanding that a great piece, nearly a foot square, had been torn from her off side, evidently by the claws of some lion or leopard, whose spring had been just a trifle too short.

Wherever impala are at all numerous, the beasts of prey of all kinds devote their attention in great measure to them, to the advantage of larger and rarer kinds of game. At the lambing time, the hyæna and the caracal are ready to do their share with the lion, the leopard, the chita, and the wild dog. The last named especially plays untold havoc among the ewes heavy in lamb and the newly-born animals which can make no availing effort to escape. Luckily this period is not of long continuance, and the young are soon able to take care of themselves nearly as well as their older companions. When pursued by its most inveterate foe, the hunting dog (*lycaon pictus*), the impala often makes for a river, and, if successful in reaching it, plunges in and swims well and strongly to the opposite bank, generally thus ensuring its escape, its cunning enemy having a very wholesome fear of crocodiles. On the other hand, the herd's habit of running in circles, round and round its favourite patch of bush, gives to its pursuers an advantage which they are not slow to make use of.

Impalas are essentially gregarious, and males and females herd together promiscuously during the winter months, maintaining this social amity up to the beginning of the lambing season. It is, therefore, during the winter that those great droves are met with, which, as the natives say, "turn the bush red." But this congregation is merely temporary, and is consequent on the limitation of food and pasture during the rainless months, which, combined with the drying up of the forest pools, forces the animals to collect in the neighbourhood of the permanent water. It is during the wet season that their ways can best be studied, when habits are dictated by choice, and not imposed by necessity. In summer, therefore, impala wander far

Impalas on the move.

Impala Ewe with Young Rams.

from their winter haunts, and may be met with scattered in small bands all over the country, wherever the bush is sufficiently thick and their favourite herbs abundant: here an old male with his harem of fifteen or twenty wives; there a band of half a dozen young rams. At this period the necessity of drinking often, so characteristic in the dry season, is less pressing. The long grass and herbage of all kinds is frequently soaked with rain, while at other times the heavy nightly dews keep it wet up to nearly midday. This moisture apparently largely suffices for the animals' needs, and their spoor in the neighbourhood of big forest pools is seldom evident until the last showers have fallen. During the summer each troop will be found in its own particular section of country, which it leaves only when food becomes short or the time arrives for the annual migration to the river banks. The first rainy day of the season is a joyous one for the impala. As the heavy clouds roll up and the air becomes dense with moisture, the bush for miles resounds with the deep and continuous grunting of the rams, their pæan of thanks to beneficent nature. At the descent of the first drop, every buck leaves the river, to be seen no more in its immediate vicinity for a period of seven months.

Clinging always more or less to the neighbourhood of dense thorn bush, to which they at once flee if surprised in the open, it is not surprising that the impala's food consists largely of leaves and shoots. Though eating grass freely, especially when young and tender after the early rains, he is more partial to browsing than to grazing. The staple diet is the leaves and fruit of certain acacias, the favourite being *acacia spirocarpoides* (native name in the Transvaal, *mlahlabantu*), which has a small oval leaf, with a hooked and a straight thorn, and produces a twisted bean pod two or three inches long, while next come *acacia arabica* variety *kraussiana*, with a straight thorn, sometimes five inches in length, and a long pod of about six inches, containing a number of big oval beans. The former bean appears to be exceedingly nourishing and fattening, and when it is in season impala will hardly look at anything else. The leaves of most of the wait-a-bit and other thorn trees also receive attention, and the softer shoots and twigs are likewise nibbled. About March the fallen apples of the marula tree are eagerly sought and the fruit eaten away from the stone which it surrounds. Towards the end of the dry season, in a district where impala are very numerous, it is worth while closely inspecting the bush to see how completely those species of trees, which are most favoured, are stripped of everything edible up to the extreme height which the animals are able to reach. The

tops of reeds are often cropped, but probably as a dessert rather than as a substantial meal; for captured buck soon became very thin and weak when these were given in conjunction with grass only; whereas directly tree foliage and bean pods were substituted, improvement in condition became apparent. The impalas sent to the Transvaal Zoological Gardens lost a good deal of condition at first, consequent upon the change from their natural food; but eventually their systems became adjusted to the green forage and other nourishing diet supplied, and they waxed fat and sleek. During the summer months the rams are in splendid condition, while the ewes are poor, from the effect of suckling the lambs; but in winter conditions are reversed, the herd rams being then, many of them, very thin, while the females gradually improve, until the acme of their condition is reached on the eve of the lambing season.

The mating season in south-east Africa is from the middle of April to the middle of May, and the rams during this period utter a deep guttural grunt, which is heard everywhere in the bush, both by night and day, and might easily lead a novice to imagine himself surrounded by dangerous predatory animals. As is the case with all other wild animals, the males contend for the possession of the other sex, and every lord of a harem has to fight for his rights, and either drive off all rivals or be content to give place to one more powerful than himself. Though fatal combats are very rare, I have known them occur. During the mating season the rams appear exceptionally alert and watchful, while the ewes are comparatively unobservant; the reverse of the condition of things at other times.

Impala lambs are born from about the end of October until the end of December, the time varying as much as a couple of weeks, according to the lateness or otherwise of the season. October 28th is the earliest date we ever noticed a lamb in the Reserve, and I doubt if any are born much after the commencement of January. The young ewes lamb several weeks after the older ones, apparently, and there is a period between the end of November and the second week in December, when very few lambs seem to be born at all. As the mating season certainly lasts but little over a month, and the lambing time frequently extends to nearly two, it would seem that the period of gestation in a wild state varies between six and a half and seven months relatively to the age of the animals and the earliness or otherwise of the rains. One lamb is born at a time, but I have had reports from rangers of twins having been once or twice noticed. It is extremely rare for a wild animal to die in the act of parturition, but

such a case was noticed near Sabi Bridge in November, 1908, in respect of an impala ewe. When her lamb is about to be born, the mother leaves the herd and chooses a bit of very thick bush, where she may afterwards be seen standing looking anxiously about, while the little one frisks gaily around. Lambs are born nearly dry; they are able to stand almost at once, and commence to play within three hours of birth. Their subsequent growth is extraordinarily rapid, and within a few days the ewe is able to bring her lamb into the herd, with the knowledge that it will be able to keep up with the older animals for at least a short distance. Little impalas when at play together form a very pretty sight; they are fond of rearing up on their hind legs after the manner of goats. When not persecuted by man, impala become fairly tame and confident, and are very easy to approach; but when accustomed to being hunted and harassed they show great suspicion and wariness. The species now exists in the Sabi Bush in large numbers, and when the unremitting slaughter of thirty years at the hands of both white men and kaffirs, as well as the constant inroads of the carnivora, is taken into account, it is an eloquent tribute to its regenerative power that it should have attained to at least something of its former abundance. The slaughter reached its culminating point at the time of the first construction of the Selati Railway, from 1892 to 1894, when the bush was filled with men armed with guns; and trucks, piled high with carcases, were almost daily dispatched down the line. Thence to the outbreak of the war, Europeans during the winter, and natives all the year round, continued to take heavy toll, and during that period itself, first Boer commandos, and later the irregular British corps established in the low country, were unremitting in their happily vain attempts to exterminate the animals. At the present time, with all shooting stopped and their natural enemies kept within proper bounds, impala are increasing in a manner truly marvellous, and spreading far beyond the limits to which they confined themselves seven or eight years ago.

The Springbuck (*antidorcas euchore*).—This, the most typical member of the high veld fauna of south Africa, is the only representative of the gazelle group which is found in the sub-continent. It has the peculiar face markings characteristic of all the other African species, and, as with them, the females are provided with horns; but it is distinguished by having five, instead of six, pairs of cheek-teeth in the lower jaw, and a deep fold of skin in the middle of the hinder half of the back, lined with white hairs

some six inches long. Under ordinary circumstances these hairs lie flat along the back, but at the will of the animal the flap of skin can be partially turned inside out, when the hairs stand up straight and spread out like a fan.

Once existing in immense numbers on all the high open plains of Cape Colony, the Transvaal, and the Orange Free State, the springbuck in these provinces is now seldom found except as a preserved animal on fenced farms. There are, however, a considerable number of the animals on the Springbuck Flats in the Waterberg district of the Transvaal, where Government has provided for their partial protection. The species ranges beyond the above limits through German South-West Africa and Bechuanaland as far north as Benguella. The springbuck is essentially a lover of high open table lands, and in south Africa is never found in a bush or forest country, except sometimes in the lambing season. Its pace is considerable, and, when frightened or in play, it indulges in the remarkable leaps whence it derives its name. The animal, as it gallops, takes several successive bounds, sometimes of nearly eight feet into the air, in a manner forcibly reminiscent of an indiarubber ball: the head is held down, the body curved in an arc, and the legs kept quite stiff and close together, while the white hairs on the back are erected to their full height.

Springbucks associate in fairly large herds under normal conditions; but when forced by lack of food or water to move from their usual habitat, these herds join together and form what is called a "trek." In former days these treks were of almost inconceivable magnitude, consisting of hundreds of thousands of individuals, and naturally the country over which they passed was denuded of every blade of grass, and for the time rendered useless for stock. Such an immense concourse of antelopes was followed by every description of carnivorous animal, which, together with wild creatures of other species, and even domestic beasts, were often seen being borne irresistibly forward in the midst of the congested throng. When an inhabited district was passed, white men and natives turned out to the last man and killed until they had to stop from sheer exhaustion. These migrations, though less in magnitude than of yore, still occur in the north-western ranges of the species.

In south Africa the young are born about November, while in south-west Africa the period is said to be a month or two later; the period of gestation is approximately 171 days.

Between the most northern range of the springbuck and the

Herd of Impala approaching water (North-eastern Transvaal).

southern limit of the typical gazelles more than a thousand miles intervene, in which no trace of the group is now met with.

The typical races of Ethiopian gazelles are as follows :—

1. Grant's Gazelle (*gazella granti*), which has an extensive range through German and British East Africa as far north as Lake Rudolph. It is a fine-looking animal, and the rams carry long and massive horns.

2. Thomson's Gazelle (*gazella thomsoni*), found through practically the same country as the above. This is the well-known "Tommy" of British East Africa. Single rams are often found associated with the last species.

3. Speke's Gazelle (*gazella spekei*), of the high plateau of Somaliland.

4. Pelzeln's Gazelle (*gazella pelzelni*), from the lowlands of northern Somaliland.

5. Loder's Gazelle (*gazella leptoceros*). I heard of this species as existing on the plains some distance east of Gondokoro, but did not succeed in seeing any. It ranges from the Sudan northwards into Algeria.

6. Isabelle Gazelle (*gazella isabella*), from the countries bordering the Red Sea from Massowa to Suakin.

7. Heuglin's Gazelle (*gazella tilonura*), from Abyssinia, and the Blue Nile.

8. Red-fronted Gazelle (*gazella rufrifrons*), extends across Africa from the Blue Nile and its tributaries on the east to Senegal and Gambia on the west.

9. Sömmerring's Gazelle (*gazella soemmerringi*), ranges through Somaliland, and part of the eastern Sudan to the Abyssinian Red Sea littoral.

10. Dama Gazelle (*gazella dama*), an essentially desert species, ranging across the continent from Kordofan to Senegambia.

11. Dorcas Gazelle (*gazella dorcas*), extends northwards from the eastern Sudan and Nigeria.

12. Clarke's Gazelle (*ammodorcas clarkei*), from central Somaliland.

13. Waller's Gazelle (*lithocranius walleri*). The remarkable looking gerenuk, with its immensely long neck, and body markings somewhat resembling those of the impala, extends from the north of German East Africa northwards into Somaliland.

14. The Beira (*dorcotragus megalotis*). This little antelope is generally classed with the gazelle group, though outwardly it is

more like a klipspringer, and has habits very similar to the latter. It lives in the hills of Somaliland.

The typical gazelles are inhabitants of wide open plains or sandy desert. They mostly bear a strong family resemblance to one another, both in outward appearance and in general habits, and are to a great extent independent of water.

Cephalophinæ

No less than thirty-eight species of this sub-family are recognised in the latest works, and, as they are usually lovers of dense bush and forest, probably other varieties from central and west Africa still await description.

The Duiker (*cephalophus grimmi*).—The common duiker is one of the most widely distributed of all African antelopes. It is numerous all over south Africa, wherever suitable country exists, even in the settled parts, and its range extends, with but slight variation in type, all through central and east Africa to Abyssinia.

Generally speaking the females are hornless, but a certain number are nevertheless equipped in this way. Both sexes have a prominent tuft of hair on the forehead, situate between the horns in the males.

The duiker is a solitary animal and is generally met with singly, though a mating ram and ewe, or a female with her last lamb are sometimes seen together. He is found in bush country, and, though often to be seen in the open spaces, never wanders very far from thick covert, to which he at once betakes himself if disturbed. When making off, every four or five strides are terminated by a bound into the air, and on reaching covert he dives beneath and through the undergrowth, turning sharply at right angles the moment he is out of sight, or believes himself to be so, and continuing this zig-zag course through the bush until he is confident that he is in safety. He never pauses to look round, as do so many antelopes after having gone a little distance, and this, no doubt, is one of the reasons why he has managed to exist for so long in the close vicinity of civilised man. While resting during the heat of the day the duiker lies down under a bush or in long grass, and on the approach of danger remains perfectly still until he fancies himself discovered, when he at once springs up and bounds away. When accustomed to be left alone, however, these animals show great confidence, and I have often passed close to individuals which rose up from concealment when I came near,

stood looking at me till I had passed, and then quietly lay down again. In captivity they become extremely tame, and seldom show fear even of strange dogs, which, discomfited by the air of nonchalance with which they are met, generally slink sadly away. A duiker ewe, which was the property of some of the troops stationed there during the war, used to roam all over the village of Komati Poort, quite unprotected, performing a round of calls on all the houses where she was accustomed to receive tit bits. Another animal, brought up by one of the rangers, after having reached maturity, was accustomed to sally forth into the forest to seek adventures, gallant and otherwise, but always was careful to return at meal times, and when frightened or chased by any predatory beast invariably made for the camp. The "call of the wild" at length, however, proved too much for him. His periods in the bush extended and his visits to camp became shorter, until at length he ceased to come altogether, having doubtless discovered a partner who did not share his confidence in mankind's protection.

Duikers are mainly browsers, and nibble the leaves and young shoots of the various acacias, and small bush shrubs, as well as the various bush fruits, and the bean pods of the *spirocarpoides;* grass is consumed also, especially when young and fresh, but I do not think to the extent that is generally believed, as, when apparently, grazing, duikers have been sometimes found actually to have been cropping little weeds and tiny sprigs of bush growing in the grass, and the tame ones I have kept at various times always preferred browsing, at least when not consuming paper, tobacco, and other like delicacies. Where water is plentiful they drink fairly often, perhaps daily, but seem, when the necessity arises, to be very well able to do without it altogether. They are deadly enemies to young growing crops, and are very clever at jumping over and crouching under the protecting fences. Of course these depredations take place at night, which render them difficult to guard against.

Lambs have been seen in the Transvaal low country during most of the summer months between November and March, and a newly born one was picked up on the 6th July. Personally I am of the opinion that they breed all the year round, except, perhaps, during the very coldest part of the winter, that is to say, June. One young one is born at a time; but we recorded an instance of twins having been seen. The period of gestation appears to be about four months, and it has been thought that two young ones are produced in a

year; I believe this sometimes to be the case, though I should hesitate to think it the rule.

The Red Duiker (*cephalophus natalensis*).—This species, which is much smaller than the last, is further easily distinguished by its foxy-red colour, and the fact of both sexes possessing horns. Like the common duiker, it is solitary in habit, and it creeps about in the densest kind of bush, seldom emerging except at night. It is a browser still more than the other, in fact it is probable that leaves and shoots, together with berries and roots, form practically all its diet. It is a regular drinker, and is seldom found far from water. Dense forest and bush, thickly-wooded ravines and stream banks are its favourite haunts. Red duikers are generally found associated in pairs, and the cry or alarm note is a compromise between a whistle and a sniff.

The red duiker is distributed through most of the forest districts of Africa and though awarded sundry specific names in different localities, the dozen or so of types into which it has been divided display superficial varieties of colour and marking only, possibly no more than the inevitable result of wild distribution upon a small and individually local animal.

In south Africa it seems probable that there is no very regular breeding season, and habits in this respect are very much akin to those of the common duiker.

The Blue Duiker (*cephalophus monticola*).—This is the smallest of south African antelopes, being little bigger than a hare. It is found in many of the forest regions of south-eastern Africa, principally near the coast, and closely allied forms are met with through the greater part of equatorial Africa. Like the red duiker, and to a still greater extent, this little animal favours the shelter of dense covert. It appears to drink regularly, and it is essentially a browser.

The forest region of central and west Africa is particularly rich in cephalophine antelopes, and one form of duiker existing from Sierra Leone to Angola (*cephalophus sylvicultor*), attains a shoulder height of thirty-four inches, that is to say, the size of an impala ram.

CHAPTER IX

THE TRAGELAPHINE ANTELOPES

THE Eland (*taurotragus oryx*).—Largest and most docile of all the antelope tribe, the eland has deserved a better fate than the extermination which has overtaken him in most of his favourite haunts. The ease with which he can be destroyed, especially by mounted hunters, and the quality of the meat which he provides, have, however, proved his death warrant. Thus an animal not only beautiful, gentle, and harmless, but one which might have proved a useful servant to man, had fate ordained that he should live amid enlightened and intelligent human surroundings, is in danger of disappearing from off the face of the earth at no very distant date.

It is true that in several parts of the continent, timely legislation has staved off the evil day, locally, and for the time being, but elsewhere, the white hunter with his weapons of precision, and the native with his Dane gun, or Tower musket, are vying with one another to eliminate the species. In fact, the only ultimate chance of survival for the eland seems to lie in domestication, and for this he is exceptionally well fitted. In size and weight the male is the equal of the ox, in intelligence considerably its superior. He is well shaped for traction work, and a few generations of attention and regular feeding would certainly augment still further his bone and muscle. The meat is excellent, equal to the best beef, while the cows give a considerable supply of milk, which domestication might enhance. He is largely independent of water, is immune from the endemic diseases which inflict cattle in Africa—so far as is known the only epidemic to affect him has been rinderpest—and, an equally important consideration, he can be taken with perfect impunity into tsetse fly areas.

The writer has for several years kept some of these animals in a domesticated state. In the morning they go out to graze with the horses, donkeys, and cattle, and return with them at night. If left unattended to roam about the station, they show remarkable intelligence, especially where their own wants are concerned. The bull

has a special liking for garden produce, and often will stand for hours, patiently watching the movements of the gardener from a little distance. The moment that individual temporarily turns his back, "Alfonso" dashes in, cleverly and quickly unlatches the gate with his horns, and, bearing down upon the nearest vegetable bed, pulls up and swallows all he can before he sees himself detected. On the approach of the avenger he makes off, bearing with him such spoils as he can seize, and endeavouring to assimilate them as he retreats. The moment the last scrap has disappeared, he halts and calmly faces his pursuer with the most innocent expression imaginable. From long practice he has learned the secret of opening most kinds of gates, and by patiently working away with his horns generally succeeds in his nefarious attempts; while, should all his efforts fail, he gauges the height of the obstacle, and, should it not exceed five feet or so, he takes a pace or two backwards, and clears the whole thing from a stand, landing with amazing lightness for an animal of his height and bulk. For his own attendant, and for people he knows, he has a wholesome respect, but is not averse from "trying it on" with strangers, especially should they happen to be native women or children carrying grain. Such persons he approaches from behind at a sharp trot, upon which they generally drop their burdens and flee in terror, while the malefactor remains to enjoy his ill-gotten spoils. Washing, hung out to dry, has been found a favourite article of diet. Newspapers are a delicacy, while tobacco, and old cigar and cigarette ends, he counts as luxuries. On one occasion I even discovered him chewing a raw-hide rope; so that there is little that comes amiss, and it is no wonder that he remains fat whatever the condition of the veld. The little peccadilloes enumerated above are, however, but the result of Alfonso's early life and upbringing. Discovered standing under a tree in Portuguese East Africa, a lonely little waif of some four weeks old, he has been a spoiled child from the beginning, knowing no fear, and, I regret to say, very little discipline. More timid and, perhaps for that reason, less personally attractive, his mate shows all the qualities most desirable in the domestic animal. She does not share her companion's tendencies towards exploration and experiment, even appears to view his excursions in those directions with grave wifely disapproval. In fact, she attempts neither to steal cabbages, nor to jump gates, and I am inclined to fancy that, with advancing years and increasing *embonpoint*, Alfonso himself will eschew these youthful frolics

Young Eland Bull.

Elands at Grass.

To one who has had close and intimate experience of these beautiful and intelligent creatures, the spirit which has prompted and still prompts their ruthless destruction, seems little less than devilish.

Elands once abounded over the greater part of south Africa between the Cape and the *Z*ambezi, but at the present day are represented in Natal by only a few individuals, protected among the Drakensberg Mountains on the western border. In the waterless Kalahari they may still be met with in considerable numbers, their relative independence of water enabling them to wander whither few hunters, except the wandering bushmen, can easily follow. From the Transvaal the last few disappeared shortly before the outbreak of the late war. The rinderpest had killed off most of those which had survived until its appearance, and the white and native hide and meat hunters quickly accounted for the few individuals which the epidemic had spared. Since the establishment of the game reserve a few have from time to time been reported in the north, about the Portuguese border. In southern Rhodesia a few are still found locally, but are, it is to be feared, being gradually exterminated, notably on the south-eastern border, where Portuguese natives with guns are busy amongst them. In northern Rhodesia plenty still exist, and the same thing might have been said of many districts of Portuguese East Africa up to three or four years ago; but the native equipped with the arms of civilisation is wearing their number down with amazing rapidity in all but the most remote localities. The species further ranges through Angola and German and British East Africa as far as the Tana River. Thence northwards it has not up to the present been met with east of the Nile, and west of that river appears in the form of another species, the Derby eland (*taurotragus derbianus*) which is distinguished by its very much larger horns and richer markings. This species extends from the left bank of the Bahr-el-Ghebel from Rejaf on the south to at least as far as the confluence of the Bahr-el-Ghazal on the north, and westwards across the Sudan to Senegambia; this fine beast is sometimes known as the giant eland. At present no connecting link has been met with between it and the form of the typical species met with in east Africa, but thence southwards there is a fairly even gradation of type from an animal with a black dorsal, and white body stripes, dark knee bands, and a small frontal bush, to one whole coloured with no indications of body markings, and large tufts on the forehead and face. The white chevrons, sometimes quoted as being distinctive of certain local varieties, seem to

appear in individuals of all of them, while absent in others. An old bull eland shot near Inhambane had a pronounced white face chevron and no forehead tuft at all; the male from that place now in captivity at Sabi Bridge has both, the female being apparently devoid of the chevron while in her winter coat, though in summer there is a faint indication. Mr. Selous also pointed out elands in his collection, which had been killed in Rhodesia and Bechuanaland, possessing very pronounced whitish chevrons, while others had no signs of such things. Like the Burchell zebra then, the eland appears to tend to change from a rich brown-coloured and brightly-striped animal in the north, to one dun-coloured and unmarked in the south part of its range, and, between the two extremities of the typical form, there are so many slightly varying local races of which the types merge so gradually into one another, and between which there are so many intermediate forms, even in the present days of local extermination, that it is difficult to find any definite dividing line. The bulls always tend to assume a bluish hue, with increasing age.

Elands are gregarious, and are, where numerous, often met with in very large herds; they have the habits as to association of males and females, common to other species. They are great travellers, and seem to be constantly on the move while grazing, while, during the heat of the day, they stop and rest for short periods only, when some large tree, providing a pleasant shade, is reached. They are browsers by inclination, favouring the grass only when fresh and green, and sometimes cropping the tops of young river reeds. At other times the leaves of various trees and shrubs, especially acacias, form the staple diet; indeed, very little seems to come amiss, and domesticated specimens eat grenadilla creepers and banana leaves, which are usually deemed to be safe from stock. Of fruits, the so-called kaffir orange (*masala*) and the apples of the marula tree (*sclerocarya cafra*) are greatly sought after in their proper seasons. Like most antelopes, and in spite of their general outward appearance, the habits of elands are more akin to those of goats than of cattle. Where water is at hand, they drink regularly about twice a day in the dry weather, but in desert regions where the rainfall is scanty, and perennial streams and permanent water absent, they seem relatively independent of it.

They are generally found in rather open forest, and are seldom met with far from covert of some kind. I have often come across them in very thick mopani scrub.

Their favourite gait, when in a hurry, is a fast trot; they seldom gallop for more than quite a short distance. For such heavy animals, their leaping powers are most remarkable, and it is not an uncommon spectacle to see the members of a herd jumping over each other when making off.

The period of gestation is about eight-and-a-half months, calves being produced singly and annually. The season in south-east Africa is from the end of March, through April, (which is the principal calving month) into May, and then again from early in August up to about the beginning of November. It is doubtful if many calves are born in the cold months of June and July, south of Rhodesia, where Mr. Selous records that it happens. Young animals, captured for me by Mr. Neergaard in the Inhambane district, were only a few days old in the middle of April, while another was taken at the age of two or three weeks about the end of August. My bull, born in August, 1905, and my cow born in April, 1906, mated for the first time on 15th February 1909. Elands thus take a considerable time to arrive at maturity, resembling cattle rather than most other antelopes in this respect. Calves were born at Sabi Bridge, on 28th October, 1909, and on 29th October, 1910, the gestation periods having been 255 and 257 days respectively. In north-west Rhodesia I once saw a calf of some two months old in June. In December and January, the usual calving time for most large antelopes, I have never noticed young animals with the herds.

Elands are silent animals. A low, rolling grunt, sometimes uttered by both sexes, is the only sound I ever heard them make; but the calves bleat like those of domestic cattle when frightened. They are very harmless and naturally gentle creatures, and can be captured and easily tamed even when quite large. Mr. Sanderson of Logogote in the north-east Transvaal, relates how, years ago, he rode down, and, with the aid of his natives, captured and secured a young bull and heifer, each of about a year old, and, though the former died from the injuries inflicted by his struggles when first roped, the latter survived, became extremely tame, and wandered in and around the farm buildings for years, until one day she was shot by some Boers passing on their way to the winter stock grazing.

At Sabi Bridge I have found the elands not very ready to mix with the full-grown cattle, though they herd freely with the calves of the latter and become very friendly with them. Consequent upon some difference of opinion a fight once took place between a

three parts grown ox and the young eland bull, in which the former proved no match for his adversary, who, getting his head down very low, brought his long horns up with a jerk, and cut the ox rather badly about the head and neck, speedily putting him to flight. The same success did not attend him, however, when he once became too familiar with one of the horses, and so great became thenceforth his respect for the heels of those animals that Alfonso has since begun to edge off the moment a horse appears in the distance.

The Bongo (*boöcercus euryceros*).—This fine antelope extends through the forest regions of central Africa from Sierra Leone and Liberia on the west, to the Kikuyu escarpment of British East Africa on the east. It agrees with the elands in that both sexes possess horns. Owing to its fondness for the very densest forest, very few of these animals have yet been shot by white hunters. In east Africa four only had been killed thus up to the middle of 1910; namely a female by Captain Stigand, a female and a young male by Mr. Kermit Roosevelt, and finally a full-grown male by the late Mr. George Grey of Rhodesian fame, whose widely regretted death, while lion hunting in east Africa, occurred recently. Mr. Grey told me that he got his bongo the first day out. After following the tracks for several hours he saw a patch of red through the bush at twenty-five yards distance, and, firing quickly, found that he had shot a big bull through the shoulder. In bongo hunting not only must patience, skill in following spoor, and quick accuracy, should a fleeting chance present itself, be present, but the lucky star must be temporarily in the ascendant. The forest is so dense, and the wind sometimes so treacherous, that a man may get up again and again to very close quarters only to be at last betrayed by some errant breath of air, and hear the unseen quarry dash away through the bamboos and undergrowth.

The Wanderobo hunters, who share the Mau and Kikuyu forests in east Africa with the bongo, kill a certain number of them, sometimes by catching them in pits and snares, and sometimes by shooting them with poisoned arrows.

Bongos are found sometimes singly, and sometimes in family parties of three or four, or possibly more. The Wanderobo say that they usually feed up to about 9 a.m., and then lie down during the hottest part of the day. In the writer's own very limited experience, however, they were moving about throughout the day, and animals were several times approached, which, by their tracks, had been standing

Eland Bull (South-east Africa).

Eland Cow and Calf (South-east Africa).

in deep soil among a lot of thick bamboos. They affect thick bamboo forest or jungly undergrowth, which is often much higher than a man's head, and use well-defined paths through the covert, drinking, apparently, regularly every night. Food seems to consist principally of the leaves and twigs of a certain kind of undergrowth which grows from six to eight feet in height, and the young shoots are all nipped off where bongo have been feeding. There is not much grass in the forest. A large charred stump had all the bark eaten off between three and five feet from the ground, and the dead wood scraped away. The natives said the bongo eat wood, and the stump certainly bore every appearance of having been gnawed by teeth. Bongo have all the cunning and wariness of the common bushbuck, and, for so large an animal, can move through thick jungle with comparatively little noise.

The Bushbuck (*tragelaphus scriptus*).—This is the typical species of a genus of forest dwellers, which is distinguished by the horns, of a spiral form, being restricted to the males only, while the females are always of a very much lighter colour than the other sex, and generally possessed of white body stripes, which are not universally present in the latter.

The bushbuck, in size the smallest member of the genus, is also the most widely distributed, being found throughout southern and central Africa as far north as Abyssinia. Its colouration varies very greatly, according to locality, being dull and dark in the south of the continent, and tending to become lighter and more distinctively marked as the species is met with northwards. Thus in Cape Colony the male is dark brown, with a few obscure spots on his haunches, whereas, north of the Zambezi, the type extending through most of central Africa is, in both sexes, of bright chestnut colour, with brilliant white spottings and transverse markings. In consequence of these diversities, naturalists have divided the bushbucks of Africa into some fifteen local sub-species ; but they all merge so gradually into one another, and show so many intermediate forms, that it is difficult exactly to define the limits of each. Cross-breeding between the extremes, if persisted in, might conceivably show interesting results.

The bushbuck is a solitary animal, being found alone, or at most in pairs, which consist generally of a mating couple, or of a female with her last offspring. Less often two rams are seen together. The species is essentially nocturnal, lying up by day in dense bush or reed beds near water, and loving, above all, the densely-wooded

gullies, or kloofs, as they are called in south Africa, which run down hillsides or clothe the banks of small tributaries of larger streams in more level country. It browses on the leaves of various small shrubs and trees, and eats grass sparingly when the latter is fresh and green; it is also rather ardently attached to garden produce, such as beans and pumpkins—a weakness which sometimes calls down wrath upon its head. Roots and tubers form further articles of diet. It is noteworthy that, at the Pretoria Zoological Gardens, the grass remains long in the bushbuck enclosure only.

Both sexes utter a hoarse bark, equally as a sex call and a note of warning, which may be repeated several times or expressed singly; that of the male is the louder and harsher. The rams are exceedingly pugnacious and courageous. Hunters have many tales to tell of damage to their dogs from wounded males; while even the formidable and experienced African hunting dog occasionally succumbs, as was evidenced by the discovery of the carcase of one with some two inches of bushbuck horn broken off in his brisket. It is sad to have to add that there was abundant evidence of the rest of the pack having finished off the plucky little antelope.

The males often fight to the death when rivals for the affections of the same lady, and probably more are killed in this way than is the case with any other species of African antelope. Bushbuck appear to lamb all through the southern spring and summer—so far, at least, as the eastern Transvaal is concerned. I once caught a very young lamb early in September, and they have been found in practically every month up to March. Evidence of the period of gestation was afforded at the Pretoria Zoological Gardens, where a ram and a ewe ran together in the same enclosure for two weeks, at the end of which some accident befel the former, and he died on the 2nd September. On the 10th April following, having in the meantime been confined alone, the ewe gave birth to a lamb. The period (over seven months) seems long for so small an animal.

The Inyala (*tragelaphus angasi*).—This is one of the most local, as it is, in all probability, one of the rarest species of antelopes in Africa. Its most southerly boundary is the Ingwavuma River, in the north of Zululand, whence, to the junction of the Usutu and Pongola Rivers, there extends a dense bush in which these animals are strictly preserved by the Natal Government. North of this point they extend through Portuguese territory for some forty miles to the Umpeluzi River, and from west to east between

the Lebombo Hills and the Maputa River—as the united streams of the Usutu and Pongola are named—a distance of, perhaps, thirty miles; so that the local range is not a very extended one. Moreover, in the Portuguese portion of the area, as was the case in Zululand until the Natal Government took the matter up, the animals have been systematically destroyed by the natives for many years. As there is a considerable demand for the horns of the males in Lourenço Marques, despite some nominal protection, which in no way affects the native hunter, it seems very probable that the next few years will see the extinction of the species in Portuguese East Africa south of Delagoa Bay. The inyala is next met with at a point nearly 200 miles north of the Umpeluzi, in the Portuguese provinces of Gazaland and Inhambane, not far from the 24th parallel of south latitude. Here conditions are much as they are in the Maputa district, and the animals are far from being numerous. It was believed, until quite recently, that from this point there extended a gap of great extent, in fact that no more inyala existed south of the Zambezi; but in 1908 Major Statham, quite accidentally, discovered the species on the Inyamapuzi River in Gorongoza, north of Beira, and secured some specimens. The antelope next appears across the Zambezi, in British Nyasaland, and this appears to be the most northerly point which it reaches. Probably within the next few years the inyala will have ceased to exist except at its present most northerly and most southerly limits. In the strip of dense bush which forms the headquarters of the species in Zululand the animals are very numerous, and beyond it they spread on the Zululand side over an area of, perhaps, 200 square miles, at the rate of one or two to the square mile. Beyond these limits there is no tendency to stray. In spite of the fact that they are to a great extent free from the attacks of natural enemies, while poaching does not go on to any alarming extent, there has been no notable increase in their numbers during the last six or seven years. There seems to be some likelihood, therefore, that the secret of the intense localisation of the species lies in the presence of some peculiar foodstuff, limited in quantity, but necessary to the health of the individual animal, or else in something connected with soil or water; otherwise, why should inyalas in the past have been so numerous on the east side of the low Lebombo Hills, and yet, so far as can be ascertained, never have extended to the west side, where the bush is, to all appearance, similar in character, in so far as it contains the various leaves, shrubs

and fruits, which certainly form the greater part of the inyala's food? A good deal of inquiry and personal investigation, however, has failed to reveal the precise factor which keeps these animals confined to certain particular and widely-separated tracts of country and sections of bush. The food consists principally of the leaves and bean pods of the *acacia arabica* and *acacia spirocarpoides*, the leaves of the thorn tree known to the natives as *mtuma*, the fruit of the marula tree (*sclerocarya caffra*), and of the "kaffir oranges," *masala* and *makwakwa*, after they have become rotted and broken up through lying on the ground. Grass is also eaten when young and of good quality. All the above, however, form the food of the impala, as well as of many other kinds of antelopes, and none of them are restricted solely to inyala districts. There is that in the character of inyala bush which somehow bestows on it a strong individuality. It is not only densely thick, with tangled undergrowth, and saplings growing close together, but, in addition, has several features of its own, notably, a fleshy-looking cactus of some three feet in height, from whose leaves grow at right angles, long, straight and very sharp spines, which obtrude themselves rudely to the notice of the struggling wayfarer. There are other unfamiliar-looking plants and leaves too, so that amid them, or in some hidden bulb or root, the secret may, perhaps, lie. The eastern part of the twenty square miles of bush in which the inyala are most densely congregated in Zululand is occupied by, at a rough computation, some 400 of these animals, and with them are found both common and red duikers, bush pigs, and bushbucks. Whatever may be the case elsewhere, the last-named are far from uncommon in this inyala bush. I saw their tracks constantly, and Mr. Lehmann, who lives at Nduma, near by, shot a fine ram close to the inyala drinking-place. The impalas, on the contrary, which occupy the western end of the stronghold, never by any chance show themselves in the inyala territory, though occasional inyalas are to be found on their side.

In appearance the inyala is rather like a glorified bushbuck, only that his markings are altogether richer, and the long fringe on throat and back gives the male a distinctive and bulky appearance. Some bulls are very much darker than others, though this is, no doubt, merely an accidental or age variation. Like common bushbuck, the inyala is often covered with lice. The horns are tipped with pale straw colour. The females are very much smaller than the males, are hornless, and differ markedly in colour, being of a bright

chestnut hue, while an old bull looks dark greyish blue. Both sexes are transversely marked with white stripes.

A few young ones are born in August, but most, apparently, enter the world in September and October, and in lesser numbers throughout the summer until March. The principal mating time is April. By mid June very few males are to be found associated with the females, so that probably the period of gestation is about six months. One young one is produced annually by each breeding female.

Inyala like plenty of water, and in the dry season, at least, drink three times a day. In the Zululand reserve they hang about the margin of a large brackish pan, and seem to prefer its water to that of either the Usutu or Pongola Rivers. The call of this antelope is a loud, hoarse bark, but the males may sometimes be heard grunting.

A day amongst the inyala in their reserve, where they are extremely tame and therefore lend themselves to observation, is, to the naturalist, one of the most interesting experiences imaginable. The essential point is to get up early enough to be on the ground a little before daybreak. Therefore, the opportunity of spending a few days among them having at last arrived, and a week's preliminary boat and land journey having transferred us to the shelter of Mr. Lehmann's hospitable roof, we overnight instruct the somewhat unreliable Umfundisi, under the alternative of various dire pains and penalties, to call us in the quite small hours. We seem hardly to have closed our eyes when we hear the familiar fumbling at the door of the hut, and the now unwelcome voice of our retainer announcing that "the kettle is boiling." We strike a light and look at our watch. "Three o'clock," and, sunrise not being until seven, there is not the smallest necessity to be astir for two hours yet. Verily Umfundisi has, native like, "got his own back" this time. It is perfectly certain that, if we obey our present impulse to order him away and compose ourselves for another hour or two between the blankets, nothing short of an earthquake will arouse him a second time; and so we light the lamp and give various elaborate and unnecessary orders about breakfast, with the object of keeping him employed. We also instruct him to go and see that the guide is on the premises according to instructions, and has not to be extracted from his kraal a mile away. And so the time slowly passes, and 5 a.m. sees us marching down the road in the dense darkness which precedes early

cock-crow. The morning air strikes chill, and a thick coat and muffler are necessary luxuries. On each side of the waggon track the bush rises like a solid black wall, and there is at this, the stillest hour of the night, little to catch the ear but the noise of the crickets and the occasional call of a nightjar. Suddenly, with a crash so sudden as to bring us to a full stop, something dashes out of the bush and across the road close in front. It is much too dark to distinguish the nature of the animal, and an irrepressible feeling of comfort fills the mind when it is reflected that predatory beasts are practically unknown in this happy valley. Now, from the kraals dotted about on the neighbouring hills, chanticleer takes up his task. First one cock, then another, then several together, herald the coming dawn: it is possible, in the still air, to hear them at a great distance. Presently the tiniest streak of light appears on the eastern horizon, and we hurry on faster, for it is necessary to be on the spot in good time. We have left the waggon track, and are plunging down a narrow winding path leading to the large bush and reed-bordered "pan," which is a sure early morning find for the animals. A big shape looms up a dozen paces in front and melts silently away into the indistinct shadows. Certainly an inyala. See, here is the very place for concealment. A dense patch of covert, isolated in the midst of a perfectly open strip some eighty yards wide, which slopes easily down to the "pan," of which the grey-looking water is just beginning to be dimly visible. On our left is an impenetrable tangle of densest bush, stretching away for miles along the banks of the Usutu; on our right it gradually thins out into more open country, the nightly feeding ground of the animals we are here to watch. Here, where they are little molested, they will remain out in the open until some little while after sunrise, when they will slowly make their way back to the water, and, after drinking, will immerse themselves in the densest part of the forbidding tangle of thorns and creepers which they call home. With the possible exception of a midday visit to the water, they will not move again until about half an hour before sunset, when a visit to the drinking place is the prelude to a night spent wandering over the feeding grounds. While standing or lying in their day shelters inyalas are extremely difficult to detect and approach, and the only chance of satisfactory observation is, as we are now doing, to catch them as they slowly make their way homewards. It is now 6.30, and the light is quite strong. A streak or two of red appears low down in the east, and bird life, till now only perceptible in the voices of the

solitary night-flyers, begins to assert itself. The bush francolins first take up the call, to be quickly joined by shrikes, warblers, and all manner of feathered denizens of the forest. A grey lourie, with his persistent "Go away, go away," swells the chorus, and the curious throbbing "hoo hoo" of a flock of ground hornbills come from beyond the "pan." And now surely some moving form fills one of the open vistas on the right. Inyalas for certain; but, by their bright chestnut hue, females—showing themselves, as they make leisurely progress down the bush aisle, to be a cow with her last year's calf. They disappear behind some bushes, and, as they do so, first another solitary female, and then two more together, appear where the first were seen. A low grunting is heard, the guide murmurs "inkunzi," and sure enough a pair of spiral horns are seen nodding and anon disappearing behind some cover not fifty yards away. Now is the chance for a photograph, surely, and we hasten to make ready, just as an imposing form issues from the shelter of a dense thicket and stands for a moment fully revealed on the edge of the open strip. Certainly a full-grown inyala bull is a grand-looking beast. His shaggy forehead and dewlap, and his proud carriage, make him appear much larger than his actual shoulder measurement of about forty-four inches proves him actually to be. His long spiral horns are laid at a graceful angle with his back, as, with head slightly raised, he glances curiously but confidently around him. Suddenly, and without warning, just as we have got him, as we consider, nicely focussed, he curls his bushy tail over his rump, so that the white underside of it alone is visible, and canters steadily across the open, to halt only on the edge of the opposite bush, into which he presently slowly disappears. He is quickly followed by three full-grown females and the one half-grown beast we saw before, and we resume our pause of expectancy. And now the upper edge of the sun just peeps for a moment over that far ridge, seems to hesitate for a few seconds, and then as it were, realising that all is well, rushes up into full view. The birds redouble their chattering, and a flock of guinea fowl, with enormous clatter, come whirring down to their feeding grounds. Ducks and geese are busy amongst the reeds, and a couple of ha-da-das, uttering the hoarse cries whence they derive their name, are flying high overhead. The feeding inyalas realise that the time for rest has arrived, and all down as far as the "pan" they may be seen singly, in pairs, and sometimes half-a-dozen together, browsing slowly up to the edge of the clearing, there to halt and consider, as does a man on the point of leaping into a cold

bath. Then, having apparently made up their minds to take the plunge, they dash across what is evidently considered the danger zone, their curled-up tails showing like pieces of white cotton-wool. The younger bulls seem generally to be associated in pairs, while the older ones are seen either singly or accompanied by from one to as many as six females. A good way down the "pan," where the bush grows nearly to its edge, we can make out individuals busy drinking ere retiring for the day. It is unsatisfactory, from a photographic point of view, this determination not to pause in the open, and we venture to leave our places of concealment, perchance to seize a better opportunity. The guide has long lost interest in the proceedings. The idea of a white man being so utterly bereft of reason as actually to take any pleasure or interest in these animals, except in so far as they provide meat, mystifies and disgusts him. Accordingly, as he follows behind, he takes pains to move silently and to conceal himself, only in so far as he dreads the results of doing otherwise, and, bursting into an untimely fit of coughing, startles a magnificent bull, which, having been standing behind a thicket some thirty paces distant, now dashes at full speed for the bush. As he reaches its edge he raises his nose till the long horns lie flat along his back, and, never checking or hesitating for an instant, dives into the tangle, to crouch and dodge under every obstacle with an ease and at a pace incredible till seen. In a moment he is lost to view. We attempt to follow; but to do so successfully is quite another matter. The creepers trip us up, the branches catch in our face and knock off our hat, the long spikes of the cactus impale our limbs, while hook thorns rend our clothing at every step. For the first time we are of one way of thinking with our follower, who suggests retreat, and, the object of the day being partially attained, we wend our way back to breakfast.

Inyalas seem extremely regular in their daily movements, and on several consecutive mornings it was possible to see the same animals making their way home, by nearly the same route, and at nearly the same time. There is probably no other part of their range where the habits of the inyala can be observed in the manner possible in the Usutu-Pongola bush.

A new species called the Mountain Inyala (*tragelaphus buxtoni*), has recently been recorded from Gallaland.

The Situtunga (*tragelaphus spekei*).—The situtunga is distinguished from other members of the genus by the great elongation of the hoofs, which are admirably adapted to the semi-aquatic life

Situtunga Ram.

Head of Bushbuck Ram (North-eastern Transvaal).

led by the animal. Wherever in Africa are found extensive reed or papyrus swamps bordering the shores of lakes and large rivers, there the situtunga is likely to be found. It still exists in the swamps to the north of Lake Ngami and through the reed beds of the Kwando and upper *Z*ambezi to Nyasaland and Tanganyika. It is probably very numerous in the Nile sudd as far north as the Bahr-el-Ghazal, and thence westwards through Uganda to the west coast territories and the Congo. Quite recently a specimen was secured in British East Africa, to the north east of Lake Victoria. About four local races of the species are at present recognised, but general appearance and habits are everywhere similar.

The situtunga is a most remarkable creature, being almost amphibious by nature, and spending the day in the midst of the marshes, little except its nose protruding when it suspects the approach of danger. By night it comes ashore to feed, and is said to associate in pairs or in small family parties. It s a strong swimmer, but, owing to the greatly elongated hoofs, finds rapid moving upon dry land a matter of some difficulty. Unless driven from its day haunts by natives in canoes, it is seldom possible to see it. Once many years ago, while marching along the banks of the Kwando River on the eastern boundary of Angola, a female stepped out of the huge swamps which border the stream along its left bank, and walked slowly up the stretch of grass separating reeds from forest. It was just after sunset, and the caravan was on the point of halting for the night. The animal seemed quite oblivious of our presence, having perhaps never before encountered human beings. Three or four of the porters, putting down their loads, gave chase, and, getting between the animal and the water, turned her into the forest, where they quickly ran her down. She moved so clumsily for an antelope that for the moment I thought she was crippled.

Until the countries north of the *Z*ambezi were opened up a few years ago, very few white men had ever had an opportunity of securing a specimen of a situtunga to their own rifle; but then, as now, great numbers were annually killed by the natives in the big periodical hunts, when the animals were pursued in canoes and speared in the water, or else driven ashore by the burning of the dry reed beds and then run down on foot.

The Kudu (*strepsiceros strepsiceros*).—It is no doubt a matter of individual opinion, but to many the lordly kudu bull with his massive body handsomely barred with white, his well-bred head,

and his glorious spiral horns, must appear the acme of nature's efforts to attain perfection of type.

Extremely wary and timid by nature, and seeking safety in the densest forest and thorn brake, the kudu has to a great extent escaped the doom which the majestic appearance of the male, the succulent flesh of the female, and the valuable qualities of the hides of both sexes would otherwise inevitably have called down upon the species. The rinderpest, however, smote him with terrible force; in common with other members of the sub-family he was well-nigh exterminated in certain districts. Even to this day, and in areas where game is carefully preserved, the species has not yet recovered from the effects of the blow, despite its natural fertility.

At present the kudu exists in various isolated parts of the Cape Colony, in Rhodesia both south and north of the Zambezi, in Bechuanaland, German South-West Africa, the northern and eastern Transvaal, Zululand, and Portuguese Africa. Farther north it extends through Nyasaland, German and British East Africa to Somaliland and Abyssinia. Kudus are seldom encountered in the open, nor as a general rule do they stray far from water; above all they love stony and rather broken ground, covered with thorn scrub, where it is extremely difficult to approach them unobserved, even with the wind blowing favourably. They are gregarious, but the troops are seldom large; the herd bulls and the young males seem to join forces with the females on the conclusion of the mating time, and to remain thus associated until the commencement of the next calving season, when they break away by themselves in small parties. The young are born through December and January in the eastern Transvaal, and the period of gestation seems to be about seven months.

The kudu is, more than most antelopes, a browser, subsisting chiefly on the leaves of the thorn acacias and bush shrubs, together with the fruits of the marula and other trees. He utters a bark not unlike, but louder than, that of the bushbuck, and the males, when fighting and at other times during the mating season often grunt loudly. He is an inoffensive creature, and though, when driven to bay by dogs, a bull will often make some attempt to fend them off with lowered horns, he can never be considered really dangerous, and I have seldom known cases of one male killing another in combat. The method of progression when alarmed resembles that of the inyala and the common bushbuck; that is to say the animal goes *under* in preference to *over* obstacles, though

when forced to do so it can jump high and well. The bushy tail is raised when the animal dashes away. Kudus are fairly local in their habits, the same troops migrating with considerable regularity each year to and from their winter and summer quarters respectively.

The females are hornless, and though very occasionally there are individuals met with having small and somewhat deformed horns, the occurrence is very rare compared with what takes place in the case of the common duiker.

The Lesser Kudu (*strepsiceros imberbis*).—This species, which stands only some forty-one inches at the shoulder and weighs about 230 lbs., is restricted to Somaliland and German and British East Africa.

CHAPTER X

THE NEOTRAGINE AND CERVICAPRINE ANTELOPES

THE antelopes included under the first of the above headings are small animals with naked or hairy muzzles, antorbital glands with round openings, false hoofs present or absent, horns present in the males only, short, straight, and ringed, basally or entirely.

The Klipspringer (*oreotragus oreotragus*).—Except near its northern extremity, where the fauna is that of Europe and Asia, Africa is destitute of the wild sheep and goats typical of the hilly regions of other continents. Throughout the greater part, however, wherever there exists rocky and broken ground, be it mountain range towering to the clouds, or lonely kopje rising fifty feet above the surrounding bush, there will be found the ubiquitous klipspringer, truly the chamois of Ethiopia. Thanks to its habits, this charming little antelope still maintains a wide distribution, and holds its own even within the confines of south African civilisation.

In such countries as provide suitable environment, almost every little outcrop of rock will be found to hold its pair of klipspringers. In these isolated habitats two is the usual number seen together, a male and a female, or the latter with her last year's offspring. Among the larger hills and mountain ranges, however, it is not uncommon to come across quite large parties of even eight individuals collected where some unusually tempting herbage offers itself; but the fact that on being disturbed they bound away in different directions shows that they are not truly gregarious animals. In localities where they are little disturbed, klipspringers may be seen at all times of the day resting or feeding beneath their rocky fastnesses, the shelter of which they at once seek on the approach of danger, bounding, head and neck erect, from boulder to boulder with astonishing speed and incredible agility: now momentarily balancing on one hoof, now springing, all four feet held close together, on to the top of a pinnacle of rock, of a surface area not much larger than half-a-crown; and so with never a stumble or a mistake, ever upwards, until they disappear amid the stones and long grass far up the hill, later perhaps to pause and gaze back at

the intruder from some well hidden coign of vantage. Often, as the wayfarer passes beneath some towering crag, he may notice silhouetted against the sky line, hundreds of feet above his head, a compact little form, the ears inquisitively cocked, and the nose extended in his direction. As he lingers to obtain a better view, or to pull out his field glasses, he sees the animal, by a springy and apparently effortless leap, clear some yawning chasm, and bound with an easy nonchalance up a slope which a man upon hands and knees could with difficulty tackle. Whether on the boulder-clad hillside or on the level ground, the klipspringer progresses by a series of jerky bounds, exactly as if his legs were set upon springs; and, when surprised in the open, as if conscious of his deficiency in the matter of pace, he makes at once for his beloved rocks.

His food consists of small shrubs and grasses growing among the stones in and near his stronghold, to the foot of which he regularly descends at night to feed. The natural moisture of the grass and the nightly dews serve him for drink during the greater part of the year, and he is often found among hills many miles not only from any permanent water, but apparently from water of any kind. It may be that being content with very little, he finds sufficient to supply his needs during the dry season in little pools of moisture deposited by last season's rains under overhanging boulders, and in shady crevices of the rocks. Perhaps when these are quite dried up he migrates by night to some other hilly ground close to more permanent pools, and in the Transvaal Reserve individuals have once or twice been surprised lying up in the daytime in thick covert far from any rocks.

The call is a thin whistle, rather reminiscent of a child's flute, or toy trumpet, and quite distinct from that uttered by reedbuck.

There are two remarkable natural features about the klipspringer. One is the construction of the hoofs, which are nearly rectangular in shape, have a long narrow sole, and form one line with the legs. The other point is the nature of the coat, which differs in texture from that of any other African antelope, and has rather the brittle appearance and feeling characterising that of a deer. It very easily breaks and comes out, and therefore the preservation of klipspringer skins is a matter demanding considerable attention. The hair makes excellent stuffing for saddle pannels.

Klipspringers, like many small antelopes, probably breed through the whole of the warm and wet season in south-east Africa. Their

principal enemies are the leopard and the caracal, while the young not infrequently fall victims to the larger birds of prey.

The Oribi (*ourebia*).—Perhaps the most graceful of all the smaller antelopes, the oribi, in slightly variant forms, is met with throughout most of Africa wherever there exists open grass country, or plains not too thickly forested. The special characteristics of the genus are the bare glandular spots behind each ear, and the tufts of hair which are developed below the knees.

In the Transvaal, oribis are not met with in the eastern bush country, except in the very occasional instance of a wanderer on the extreme edge of it. Their habitat is what is generally known as middle veld, that is to say, fairly open country between 1500 and 3500 feet above sea level. They lie close, and when put up go away in a series of long graceful bounds. In south-east Africa they appear to breed during most of the summer months, and on the Upper Nile, near Gondokoro, I saw a number of lambs in December just after the rains. Though a number of oribis may often be seen feeding together, they are not really gregarious animals, and when a number are disturbed, they generally break up into pairs, or at most three individuals, which would consist of a breeding couple, and the last offspring of the female. They are grass feeders, and are seldom found at any great distance from water. Their call is a shrill, thin whistle. The flesh is excellent eating.

The genus shows from north to south of the continent slight variations in type which have been by some authorities held to deserve the distinction of separate species, though there seems no reason to suppose that these local races would not breed freely one with the other.

1. The Abyssinian oribi (*ourebia montana*).
2. The Gambia oribi (*ourebia nigricaudata*).
3. Haggard's oribi (*ourebia haggardi*), from British East Africa.
4. Gosling's oribi (*ourebia goslingi*), from the Congo.
5. Cotton's oribi (*ourebia cottoni*), from the north-east of Lake Victoria.
6. The Kenia oribi (*ourebia kenyæ*), from the Kenia district of British East Africa.
7. Peters' oribi (*ourebia hastata*), from Moçambique and Nyasaland, and
8. The typical form of Cape oribi (*ourebia scoparia*), from south-central, south-east, and south Africa, which is a slightly larger animal than any of the others.

The Steenbuck (*raphiceros campestris*).—The steenbuck, thanks to its fecundity, and its ability to do without water for long periods, still contrives to exist in the civilised portions of south Africa, in spite of the unremitting efforts of natural enemies, dogs, and men to exterminate it. The species, generally distributed throughout south Africa, as far north as Nyasaland, in all open and lightly forested country, is occasionally found in fairly thick bush, but never in broken and mountainous areas. It specially favours open treeless flats, surrounded by or dotted with patches of forest. In such places the little animals may be seen slowly moving about at all times of the day, and, contrary to the custom of most wild things, they appear to stroll about feeding during all but the very hottest hours. They lie down a great deal in the open, and the shelter of a tuft of grass often serves as an adequate concealment. They are solitary little creatures, being generally found singly, except in the mating season, when a male and female are found associated. Where undisturbed, they soon become extraordinarily tame and unsuspicious, and allow approach to within twenty or thirty yards; while, should the wayfarer show a disposition to pass on, they will not infrequently quietly resume their recumbent posture, only their large nervous ears appearing above the sheltering grass. They breed during the south African summer, and well into the autumn, and it seems likely that the female often produces two young ones in the course of the year. Their food is grass, supplemented by young shoots, and occasional roots and tubers. They are silent animals, occasionally uttering a very slight snort as an alarm note; but they bleat piteously when seized by any carnivorous enemy. In captivity they do not thrive nearly so well as duikers, though they become equally tame and friendly.

The steenbuck shows a high specialisation in having no false hoofs.

Sharpe's steenbuck (*raphiceros sharpei*).—This species extends from Nyasaland and northern Rhodesia to the north-east Transvaal. Owing to the white hairs in its coat, it is often mistaken by hunters for a grysbuck; it has, however, no false hoofs. It favours rather rocky ground, and in the Transvaal I have seen individuals in open glades near the foot of the Lebombo Hills, so that its habits seem as much allied to those of the grysbuck as the steenbuck. The horns are very short.

The Grysbuck (*nototragus melanotis*).—The range of this not very common species is confined to some of the coast and low-lying districts of the Cape Colony. Writers who mention its being

numerous in the eastern Transvaal, must I think, have confused it with Sharpe's steenbuck. It certainly bears rather a strong superficial resemblance to the latter animal, which having been described as a distinct species only comparatively recently, renders the mistake of the ordinary hunters not very surprising. I never myself came across the grysbuck in the Transvaal, though Sharpe's steenbuck becomes fairly common towards the northern portions of the game reserves.

Its form is stouter than that of the steenbuck. The hair is long and coarse, with a number of white hairs mixed with the red ones, giving the animal a grizzled appearance. Belly, chin, throat, and eyebrows are paler. Ears are large and dark grey in colour. There is often a dark T shaped mark on the crown. Horns are stouter, and rather more curved forwards than those of the steenbuck. False hoofs are present, though small.

The grysbuck prefers a good deal of covert, and is generally found in rather hilly districts. It moves with its head carried low, and instead of bounding away when disturbed after the manner of the steenbuck, it seems rather to "scuttle": its pace is not very great, and it makes for the shelter of the bush when seeking safety. Its diet is similar to that of the steenbuck.

Livingstone's Suni (*neotragus livingstonianus*).—The range of this graceful little creature extends from northern Zululand along the coast to the Zambezi and Nyasaland. It is not found far inland, and does not exist in the Transvaal. In Portuguese East Africa within a hundred miles of the coast it is, however, very numerous in places, especially in the Inhambane district near Coguno, and on the lower Tembe and Maputa Rivers near Delagoa Bay.

Livingstone antelopes, as they are generally termed, are found in the densest undergrowth, where it is generally impossible for a man to progress. They are excessively timid and wary, and, instead of bounding away like most small antelopes, they run under the covert, crouching and slinking, more like jackals or cats, than bucks. They are very difficult to see unless a man has had a lot of practice in picking them out amid the dense scrub. The best plan, perhaps, is to enter the forest before daylight, or late in the afternoon, and to sit down within a small shelter of branches, keeping very still and quiet, the spot selected being near to where the tracks betray the usual runs of the animals. Presently a dainty little form may be seen delicately picking its way along, pausing every few steps to look around or to feed, every sense evidently tuned to extreme alertness,

the slim legs, not much thicker than a pencil, in constant and springy motion. The slightest suspicious noise and the animal simply vanishes. The eye scarcely sees him go.

They usually move about singly, or sometimes in pairs. The ordinary cry is a whistling snort, low in tone and not usually repeated. Their food consists partly of leaves and young shoots, and a very distinctive diet is a long carrot-like root of a pale flesh colour, having fibrous protrusions at the thicker end. This root is very common in all bush frequented by Livingstone antelopes, and where it is absent, though the forest may be in all other respects apparently suitable to their requirements, they are not met with. It is probable that they pick grass in the open glades on the edge of the forest when they leave the latter at night. They are apparently quite independent of drinking, as they seldom venture far from their particular piece of forest, often situate many miles from water of any kind. Probably the roots which they eat so largely supply both food and drink.

Varieties of the genus are the Royal Antelope (*neotragus pygmæus*) and Bates's Pigmy Antelope (*neotragus batesi*) from the west coast. Harrison's Pigmy Antelope (*neotragus harrisoni*) from the Congo, and the Suni (*neotragus moschatus*) from Kilimanjaro to Moçambique; also found in some of the small islands near Zanzibar.

The Dik-dik (*madoqua*).—Dik-diks are very small antelopes with pointed and elongated noses almost completely covered with hair. The crown of the head possesses a tuft of long hairs. The tail is very short. False hoofs present, but minute.

The genus extends diagonally across Africa from Abyssinia and Somaliland to Damaraland, and inhabits dry and open country. Eleven species are described in "The Game Animals of Africa," and none are much larger than a hare.

Cervicaprinæ

Animals of large or medium size, without antorbital glands, and with well-developed false hoofs; horns in male sex only, generally ringed and curved forward.

The Waterbuck (*cobus ellipsiprymnus*).—The waterbuck ranges through the more open forest country of eastern Africa from Somaliland in the north to Zululand in the south, and spreads westward to northern and southern Rhodesia, and German South-West Africa. In the eastern Transvaal it is the most numerous of all the larger antelopes, and attains there a considerable size, both in bodily

bulk and in length of horn. Towards the limit of its northern range the trophies carried by the males are very much smaller; there being in this respect a remarkable agreement with the sable antelope.

Waterbuck favour the neighbourhood of the element whence they derive their name, and are seldom found very far from the banks of large rivers, or from permanent water of some sort. They are partial to rough and broken country, stony hill sides, and the vicinity of fairly thick bush, and are not found on the high open plateaux. When single animals are pursued, and find they cannot otherwise escape, they take to the water; I have seen individuals chased by wild dogs swim right across deep rivers; but their usual custom is to come to bay in a pool, where they stand with little but the head and neck protuding. In this position their enemies can approach by swimming only, giving the antelope a considerable superiority, of which he takes full advantage by striking with his horns and fore feet. When thus "held up" by domestic dogs, the animal's whole attention is often so concentrated on keeping them off, that it is possible to approach quite close to him. Unlike most antelopes, which, when drinking, stand rather back from the water, waterbuck go right in, often above the knees, and take a considerable time over the process of satisfying their thirst. They generally drink from about dawn to a little after sunrise, and again rather late in the afternoon, in addition, they may possibly seek the water at some time during the night, and in hot dry weather, about midday. Opposite my station at Sabi Bridge I once saw a waterbuck bull walk quietly down to the river, deliberately swim across a deep and swift channel to a rock some twenty-five yards distant, where he remained looking about for some fifteen minutes, and plunge in and swim back again. Nothing, so far as could be seen, had alarmed him. On dry land, the pace of the waterbuck is relatively slow; he prefers to trot, but when excited or alarmed breaks into a heavy gallop, not maintained for any very great distance. He can move over broken and stony country with great facility.

The waterbuck is essentially gregarious. Of course, as with other wild animals, solitary bulls are not uncommon, and are seldom noticed seeking the society of members of other species; but generally speaking four or five young males are found together, while one herd bull will be seen attended by a considerable number of females and half-grown animals of both sexes. The largest number of cows I ever saw in the Transvaal to one bull was nineteen, but in

Waterbuck bayed by Dogs.

Waterbuck bayed by Dogs.

north-west Rhodesia, I once counted thirty-five. During the dry season, when succulent herbage becomes restricted to the banks of the streams, it is not uncommon for two or more herds to join forces at watering and feeding times, when forty or fifty individuals may be temporarily associated. Along the Ngwanitzi River, in the Transvaal Game Reserve, where the species is especially numerous, herds numbering from eight to thirty are practically never out of sight of the traveller.

During the mating season the bulls fight obstinately; but whether owing to the nature of their horns, or the thickness of their hides, fatal affrays are infrequent. I once killed a solitary bull which was absolutely covered with horn marks, some old and some quite fresh, there was one partially healed wound in the shoulder at least three inches deep. An old bull having one horn of normal shape, while the other grew quite straight and at an unusual angle, kept all rivals successfully at bay for several years, and collected a harem of more than usual size, his malformation doubtless giving him an advantage in combat; but at last his career of victory was cut short by a lion. Waterbuck cows are very watchful and wary, though the bulls are usually rather slow of apprehension, in my experience. The calves are at first of a reddish colour, and are, in south-east Africa, born more or less all through the southern summer, after a gestation period of about eight months. I once saw a young animal, apparently a month old, on November 16th; and in another year, on November 22nd, a cow was killed by lions, which had a perfectly formed calf inside her.[1] A herd which waters exactly opposite my dining-room window at Sabi Bridge has afforded, during some seven years, opportunities for continual observation under advantageous circumstances, and I have been able to observe it increase from a single bull and three cows to one of quite respectable dimensions. Most of the young ones certainly appear with the herd about the end of February, being then seemingly some two weeks old; but I once noticed three cows together on the 24th January; the first was accompanied by a large calf at least three months old, the second by one perhaps a month less in age, but old enough to have exchanged its rufous coat for a grey one, while the third, not much more than two weeks old, was fawn-coloured. Once about the beginning of March I was riding through the bush, when a little waterbuck calf rose from the "form" where

[1] A calf about a month old was noticed at the beginning of September, but I think this may be safely regarded as a quite exceptional case.

it had been left by its mother, and came trotting up to the horse. It betrayed practically no nervousness when I dismounted, and stretched out its nose to touch my extended finger. After a time the mother appeared upon the scene and trotted round and round with every appearance of anxiety for her offspring, sometimes making as if she would approach close up, when, her natural fears momentarily proving too much for her, she would spring away out of sight. When at last her errant offspring saw fit to join her, she lost no time in taking him out of the way of further adventure.

Although wild dogs, leopards and chitas hunt and kill the females, calves, and half grown males of waterbuck, the adult bulls are seldom attacked, so far as our experience in the Reserve goes, by any natural enemies except lions. A ranger records an experience of a bull charging two chitas, which had pulled down a calf.

Natives in the eastern Transvaal have sometimes pointed out that there are two different types of waterbuck, and no doubt some herds are uniformly darker in colour, and I think larger in size, than the majority, which appear of a sandy grey hue. This variety seems dependent on the habitats of the animal, the waterbucks on the Lebombo Hills belonging to the former category, and most, though not all, of the flat country ones to the latter.

Waterbuck are grass feeders. The meat is rather stringy, and it is fashionable to speak of it as uneatable. As a matter of fact the flesh of most adult male antelopes is hard and tasteless, if cast fresh into the cooking pot, and boiled to a rag by the untrained raw native who is dignified by the name of "cook" in most south African hunting parties. Waterbuck meat being coarser grained than usual, suffers from this treatment in an extra degree; but if it is hung for the correct period, and cooked with some small amount of scientific attention, there is not much difference apparent between it and that of any other species. Quite a number of people, who might easily escape being mistaken for experienced epicures, think it the correct thing to express the utmost fastidiousness in such matters. I recollect "an old hand," who was horrified at being asked to share a meal of waterbuck meat, partaking with relish several days later of a portion of the identical joint, which had meantime undergone proper culinary preparation; doubtless if he had been told the nature of what he was eating he would not have expressed the same satisfaction.

Waterbuck are highly scented animals, and their not disagreeable odour is easily perceptible to the nostrils even at some distance, when the air hangs damp and heavy.

The Sing-sing Waterbuck (*cobus defassa*).—The sing-sing is easily distinguishable from the common waterbuck in possessing a continuous white patch on the buttocks, instead of a white ring. It is also decidedly more rufous in its general colour, and is more strongly marked. It is not found south of the Zambezi, and north of that river exists in several sub-species in Angola (Penrice's waterbuck), German and British East Africa, Nyasaland, Sierra Leone, Nigeria, Uganda, and the Upper Nile to Abyssinia. The largest recorded horns come from Toru in the north-west of the Uganda Protectorate. I think the horns of the waterbucks found north of Lake Victoria tend to be longer, slighter, and more gracefully lunated than those of animals met with farther south.

The habits of the sing-sing appear very similar to those of the common variety. I noticed no calves on the Upper Nile in December, though I had the opportunity of seeing a large number of herds, the young animals which I noticed were more than half grown. Three hundred miles further south, to the east of Lake Victoria, Colonel Roosevelt records the cows dropping their calves in November.

The Lechwe (*cobus leche*).—A little smaller than the waterbuck, with the hair firmer and less coarse, the lechwe is, in general colour, a darkish chestnut, becoming white below; the hoofs are rather elongated and pointed, and the space between them quite bare. The horns are much more curved than those of the waterbuck, and the tips, which the rings almost reach, are inclined strongly forwards.

The lechwe ranges from Lake Ngami northwards along the Kwando and the upper Zambezi and its tributaries, wherever conditions are favourable to its habits, and extends into north-east Rhodesia. In the Lake Mweru district there is a curious variety of type, the old males being almost black on the upper parts of the body and outer surfaces of the limbs.

Lechwe inhabit the great reed swamps which, consequent on the annual overflow, border the rivers in many parts of northern Rhodesia. After situtunga, they are no doubt the most aquatic of all antelopes, and in the heat of the day may be seen standing knee, or even belly deep, in the middle of one of the large shallow lagoons which occur here and there amid the wastes of reeds or papyrus. They are met with in troops of considerable size, ewes and herd rams—generally several of the latter—and parties of bachelor males. When disturbed they stick their noses out straight, and the males lay their horns flat along their backs; they then trot away and later

increase the pace to a rather heavy gallop, always making for the shallow water, through which they progress by a series of bounds, swimming where it is out of their depth, and then splashing on again when their feet once more touch the bottom. At night they come ashore to graze, and may sometimes be seen in the cool of the morning feeding and lying down on the banks. Their food consists of grass and young reeds.

Mrs. Gray's Waterbuck (*cobus maria*).—This animal is very much like the lechwe in form though it differs in its much darker colour and striking markings. Some observers consider it to be merely the northern form of the latter, which perhaps has tended to lose its contrastive hues in the course of its southern progress, as indicated by the dark type found near Lake Mweru. This very handsome antelope is found on the Bahr-el-Ghazal, among the White Nile sudd, and in other suitable parts of the southern Sudan. A few may often be seen from the steamer on the tongue of land at the junction of the Bahr-el-Ghazal and the Bahr-el-Ghebel.

The following is extracted from Mr. E. N. Buxton's account of an expedition to secure *cobus maria*.

"As a general rule, Mrs. Gray's antelopes are hidden when standing 'um suf,' as the common reed grass is called, which covers vast expanses; but when a herd starts running, a number of black points—the tips of horns and ears—become visible, apparently skimming over the top of the grass like a flight of swallows . . . . *Cobus maria* has a curious gait, carrying head and neck very low, which is a part of its secretive habits . . . . The species is in no danger, as there are wide regions frequented by them, which are practically inaccessible from the river. The natives hunt them with dogs, concealing themselves in the reeds, and spear them when they rush for cover. We saw loin cloths made of the skins of these animals worn by women. I do not think they are much preyed upon by lions or leopards, at least I saw no tracks of these animals, and it is obvious that these animals could not be easily approached by them when they are standing, as is their wont, in shallow water. The peculiar colour of the old males—nearly black, with a large white patch on the withers—is only attained by a small percentage of the herd. At a later stage, in a more open place, I had a good sight of a large herd; I counted seventy, and, as far as I could make out, there were not more than three or four black males accompanying them, the remainder, whether male or female, being fawn coloured."

The Puku (*cobus vardoni*).—General colour, a rich orange yellow; a small tuft of black hairs marks the opening of the antorbital glands, the ears have black tips; horns are stout, with a slight forward and outward curve at the base, and with the tips directed forwards, strongly ringed for the greater part of their length.

The puku stands a couple of inches or so less at the shoulder than the lechwe (about thirty-nine inches) and is of stout build. It extends from the Zambezi through northern Rhodesia as far as Lake Mweru.

It is less aquatic in habit than the lechwe, and approaches in this respect rather to the waterbuck, being found close to, but not in, the water. Where numerous, the species is found congregated in large herds, and a dozen years ago they were to be seen in great numbers on the swampy plains bordering the Kafue River in north-west Rhodesia.

The Uganda Cob (*cobus thomasi*).—This is a local variety of the typical Buffon's Cob (*cobus coba*), and its range extends from the southern shores of Lake Victoria through Uganda. It is found associated in very large herds, and in appearance and size approximates rather closely to the puku.

Uganda cobs are fond of open rather swampy plains in the neighbourhood of rivers or permanent water. I found them in great numbers near Kabulamuliro in Uganda, in a spot where, the swamp grass having been burned, the young shoots were coming up fresh and green. They were very unsuspicious animals and allowed approach to sixty or seventy yards, without any necessity whatever for concealment. When they did make off, it was only for a distance of a hundred yards or so, when they would stop and recommence feeding. The rams seemed to like climbing on to the top of the numerous large ant-heaps which studded the plain, whence they could have a good view of the surrounding country. A herd was very often accompanied by a single bohor reedbuck, which, grazing slightly apart, always appeared very much more on the alert than the cobs, and was always the first to set the example of departure.

The typical race ranges through western Africa north of the Equator, and eastwards through the Sudan.

Vaughan's Cob (*cobus vaughani*). — Apparently intermediate between the Uganda cob and the white-eared cob, is found to the west of the Upper Nile.

The White-eared Cob (*cobus leucotis*).—Is found along the various branches of the Upper Nile, between Bôr and the Sobat.

The Reedbucks (*genus cervicapra*).—These animals are in some respects not unlike the genus *cobus* but are generally of smaller size and have very bushy and short tails, they also have glandular and naked spots on the side of the head below the ears.

The Common Reedbuck (*cervicapra arundinum*).—This antelope is still found somewhat sparingly in the Cape Colony. It is common in the lowlands of Natal and Zululand, the Transvaal bush country, Ngamiland, German South-West Africa, Rhodesia, both north and south of the Zambezi, to Angola on the west and Nyasaland and Moçambique on the east. Lately the species has been discovered to exist so far north as the southern Sudan.

Reedbuck favour what are known in south Africa as "vleis," that is to say, grassy or reedy valleys near streams or permanent water of some kind; occasionally they are met with in thin bush. Although partial to the close proximity of water they appear to avoid entering it, nor have I ever seen or heard of them taking to it when pursued, as do waterbuck and impala. They associate in family parties of three or four, and solitary rams are often seen. Their pace is not great, and they are cursed with a fatal inquisitiveness which often proves fatal to them. When frightened they move off with a rocking-horse action, the quarters thrown high with every stride, and the bushy tail erected fanwise over the rump.

The alarm signal and general call of the animal is a shrill and distinctive whistle. When camping near their haunts this note will be heard all through the hours of darkness, and is one of the most typical of African night sounds. When not used to being disturbed they became extraordinarily confiding; often I have passed ewes lying down at close quarters, which did not even take the trouble to get up, and others of both sexes, suddenly startled from sleep, will stand staring in astonishment, the idea of danger apparently not occurring to them. Their food consists entirely of grass, so far as I have noticed.

In south-east Africa reedbuck lambs are born earlier than those of most antelopes having a regular breeding season. Many arrive in August and September, and I think the majority of the females are heavy in young in July; still, no doubt, occasional lambs go on being dropped all through the rainy season, and, in this case, as in most others pertaining to the habits of wild animals, experience shows the danger of arbitrary assertion. Undoubtedly, the shooting season in the Transvaal, when prolonged into August, interferes greatly with the breeding of reedbuck, and causes many young lambs,

A Waterbuck Bull in act of rising.

Mountain Reedbuck (*Cervicapra fulvorufula*).

through the death of their mothers, to perish of starvation, or fall victims to the smaller carnivora. The rams fight fiercely in the mating season, which is most in evidence in the late southern autumn and early winter, and a good many of the combats have fatal results.

Reedbuck show a remarkable partiality for the neighbourhood of human habitations, and at night are sad depredators of growing crops and garden produce, unless efficient means are taken to keep them out, a precaution not popular with the natives of Africa.

I have always considered the meat excellent, though some epicures appear to take exception to it.[1]

The Mountain Reedbuck (*cervicapra fulvorufula*).—This species is generally referred to in south Africa by its Dutch name of rooi rhebok. It is spread through the eastern part of Cape Colony, Natal, Zululand, Swaziland, Orange Free State, the Transvaal, and Bechuanaland, and appears in east Africa as a separate sub-species known as Chanler's mountain reedbuck, and in Abyssinia under the name of the Shoan mountain reedbuck.

Rooi rhebok favour the lower slopes of hills where there are many rocks and loose stones, mingled with plenty of scattered bush and long grass. They are very wary animals, and partly on that account, and partly because of the noise necessarily made in moving over the stony ground when approaching them, they are difficult to get near. When disturbed they usually run round and round the hill a short way below the top, stopping in the open valleys and necks between adjoining features, to see if they are still pursued. They seldom move more than three or four hundred yards before pulling up to look back. The ears are so long and slender, and the horns so short, that, except for their smaller size, the females, in the absence of a pair of field glasses, might easily be mistaken for males at a distance. They are found in parties of sometimes as many as eight individuals. Their method of moving is similar to that of the common reedbuck, and their fanlike tails are spread over the back in the same way. Their call is a shrill whistle scarcely distinguishable from that of their cousin.

Rooi rhebok are grass eaters. After dark they come off the hills and feed down towards the nearest water, near which they remain during the night, getting back to the rough ground before dawn.

[1] Several cases of complete albinism in both sexes have been recorded in the Transvaal Game Reserves. A ewe which I secured for the Transvaal Museum had not a coloured hair on her body, but her lamb was normal in all respects.

They drink once or twice during the night, according to the state of the atmosphere; so far as we have been able to observe their habits in the Reserve, when the weather is hot and dry they do so on first getting down to the water, and again just before leaving its neighbourhood. When looking for these animals it is useful to remember that it is the sides, and not the tops of the hills, which they affect.

The Bohor Reedbuck (*cervicapra redunca*).—The bohor reedbuck, in several local races, is spread over western and northern Africa from Gambia to Abyssinia, including the Sudan, Uganda and east Africa. In the Nile race the horns take a great outward spread, which gives them a very distinctive appearance.

These reedbucks are generally met with in family parties, and the single males have a way of attaching themselves to the herds of Uganda cob, which affect the same country, namely, open vleis and bush or swamp land. They like the neighbourhood of water, and seem to be on the move until pretty late in the day. Their action in moving off is much less pronounced than that of typical reedbuck, and the head appears to be held straight out and low; the bushy tail is spread, however, in the manner characteristic of the other species. They are altogether seemingly more alert and active animals than the latter, and the pace at which they move is considerable.

The Grey Rhebuck (*pelea capreolus*).—This animal, known in the south as the vaal rhebok, has woolly fur, a large rhinarium, and no gland patches under the ears, such as have members of the preceding genus. The horns are nearly vertical, ringed, and straight, in fact, except for their greater size, much like those of a steenbuck.

The rhebuck is found only south of the Zambezi River, and is restricted mainly to the great mountain ranges and their immediate neigbourhood. Its existence north of the Limpopo does not seem to be well authenticated.

Unlike the mountain reedbuck, this species is generally found on the flat tops of the table mountains which are so common in south Africa, as well as on the higher levels of the ranges. It goes in small parties, and when making off the rocking-horse action is very pronounced, the hindquarters being flung high into the air at each stride and the tail spread out fanwise over the back. The alarm note is a sharp cough. Rhebuck are grass feeders, and descend at night to drink after the manner of the mountain reedbuck.

CHAPTER XI

CARNIVORA

Definition—Breeding and other Habits—Methods of Capturing Prey.

THE order Carnivora contains the flesh-eating mammals, and is divided into two sub-orders, the *Fissepedia* (terrestrial) and the *Pinnepedia* (marine). The toes, of which there are never less than four, are always provided with claws, which may be retractile or otherwise; there are generally three pairs of incisors in the upper and lower jaws, and there are always on each side of the mouth two carnassial, or canine, teeth—one above and the other below—which form a pair of blades acting on one another like scissors.

The *Fissepedia* have been further split up into three divisions: the *Æluroidea*, or cats, the *Cynoidea*, or dogs, and the *Arctoidea*, or bears. The first of these divisions is made up as follows:—

(1) Family *Felidæ*. Consists of the genera *Felis*, containing the true cats, and *Cynælurus*, composed of but one species—the Chita.

The members of the former genus are the most specialised of all the carnivora family. The head is short and rounded, the teeth reduced in number and greatly modified, while the claws are long, sharp, and fully retractile. All are digitigrade. The genus contains, in Africa, the following species:—

The lion (*felis leo*), the leopard (*felis pardus*), the serval (*felis serval*), the black-footed wild cat (*felis nigripes*), the African wild cat (*felis ocreata*), the African tiger cat (*felis celidogaster*), the jungle cat (*felis chaus*), the caracal (*felis caracal*).

(2) Family *Viverridæ*. This is a very large family. Its members are animals possessed of elongated heads and bodies, with short legs. The cheek teeth are more numerous than among the *felidæ*, and the lower carnassials are provided with grinding surfaces behind the blades. The claws vary in retractability, and some species walk upon the soles of their feet (*plantigrade*) and not upon their toes (*digitigrade*), as most ungulates and other carnivores do. The family consists of the following genera:—

The civet (*civetta*), the genets (*genetta*), the mungooses (*mungos*,

helogale, *rhynchogale*, and *crossarchus*), the merecats (*cynictis*, *bdeogale*, and *suricata*).

(3) Family *Protelidæ*. The aard wolf (*proteles*).

(4) Family *Hyænidæ*. The hyænas (*hyæna*).

The second division (*Cynoidea*) contains: Family *Canidæ*, which consists, in Africa, of the jackals (*canis*), the African foxes (*vulpes* and *otocyon*), and the African hunting dog (*lycaon*).

The third division (*Arctoidea*) contains, in Africa, south of the Sahara, the family *Mustelidæ*, the members of which have five toes to both fore and hind feet and non-retractile claws. The family is made up of the Cape otter (*aonyx*), the spotted-necked otter (*lutra*), the ratel (*mellivora*), and the polecats (*ictonyx* and *pœcilogale*).

The *Pinnepedia*, or marine sub-order of mammals, is represented in south Africa by the family *Otariidæ*, which contains, there, only the Cape sea lion (*arctocephalus*).

Although all are embraced under the heading of flesh-eating animals, several of the forms are not strictly so in reality, insects and fruits forming a large part, in some cases nearly the whole, of their diet. All the members of the order display very high specialisation, adapting them perfectly to their mode of life and to their environment. While the larger types have varied little specifically during the ages in which they have roamed over the Ethiopian region, the smaller forms often show considerable divergences.

In south-east Africa the young of most of the carnivora seem to be born during the dry season, which is the reverse of the general rule controlling the reproduction of the majority of the ungulates. Though it is rash to propound theories in such matters, it is at least worth notice that the time when the young carnivora become of an age to accompany their mothers coincides with the period when the other order are usually producing their offspring.

Purely flesh-eating carnivora cannot, like hoofed mammals, be classed into bush and plain-loving species; the particular description of habitat appears immaterial so long as it contains their natural prey and suits their various individual methods of securing it. All the species are nocturnal, or semi-nocturnal, in their habits, and like to spend the hours of daylight sleeping, concealed in bush, grass, holes, or often quite in the open, sheltered from the direct rays of the sun by some slight shade, of the necessary proportions whereof they have no very exaggerated conception. They are seldom found far from water, partly because a considerable quantity of the element is necessary to them, and partly because its vicinity forms their most

convenient hunting ground. At night, when in pursuit of food, they often wander far afield, but cockcrow generally finds them near a drinking place of some kind. They all have great capacity for seeing in the dark, and hearing, scent and eyesight are, in most cases, remarkably developed. Their intelligence, too, is very high; indeed, were it not in advance of that possessed by the swift-footed creatures upon which most depend for their food, it is obvious that they could not long have survived in the struggle for existence.

Although, generally speaking, flesh-eating prey upon herbivorous mammals, or upon birds of different kinds, the various species will attack each other on occasion. Thus I have known leopards to kill and eat genets and civets; lions and leopards will prey upon wild dogs—a compliment which the latter would certainly return did a fitting opportunity offer. A civet once killed and ate one of my domestic cats. I have heard of wild dogs hunting both jackals and hyænas, though I do not know whether they would go so far as to eat the latter animal. Hyænas, in their turn, will finish off and devour any animal if helpless and weak from age or illness, without regard to whether it is carnivorous or otherwise, so long as it does not belong to their own species; and they look upon small dogs and cats as delicacies. The fondness of leopards for domestic dogs as an article of diet is proverbial. Although it is a good general rule that no animal will eat another of the same species, isolated cases of cannibalism do occasionally occur—more frequently amongst the *felidæ* family than elsewhere, I think.

Unlike the herbivorous animals, through whose systems, in order that strength may be duly maintained, a more or less regular quantity of food must pass daily, the wild carnivora are by their nature suited to spend their lives in alternately gorging to repletion and undergoing relatively long periods of abstinence. This adaptation to conditions has, of course, been the necessary condition of their survival, for, whereas under ordinary circumstances the vegetable-eating creature finds food always to hand, the meat eater has to hunt for his, and to depend on the superiority of his cunning and activity in order to secure it. Thus, when fortune is unkind, he may have to endure considerable periods on an empty stomach, and it is important to his existence that this enforced hunger, within due limits, shall not interfere with his bodily strength. Carnivorous animals, therefore, after having eaten all they can at one meal, like to lie down and sleep off the immediate effects. Should anything remain of

their "kill," they remain as close at hand as possible, returning to it in the intervals of their waking moments, and so spend their time alternately gorging and sleeping until no more remains. They then continue to take their ease, without a thought of the future, until hunger prompts them once more to wander abroad in search of prey. Exceptions to this procedure sometimes occur among certain species, and in localities where food is so exceedingly plentiful that it can be obtained practically at will, and is not therefore so precious as to call for consumption down to the last morsel.

Carnivora capture their prey by surprise, by ambush, or by overhauling it in fair chase. The two first are the methods adopted by the retractile clawed members of the order, which, from the nature of their feet and general construction, are less suited to moving long distances at speed than are such of the others as are possessed of stout non-retractile claws, together with bodies and limbs specially fashioned for running fast. Generally speaking, predatory animals hunt by night, and, when not lying in ambush in places where animals are likely to pass, prowl about within certain fairly well-defined areas until they scent their quarry, when they endeavour to work up wind to it. Outside this general definition, the means employed vary greatly according to the nature of both hunter and hunted, and to the attendant circumstances of each particular case. A very high standard of intelligence, and, where individuals hunt in parties, a remarkable faculty for combination is often shown. Animals are sometimes permitted to get the scent or catch sight of one or more of their pursuers that they may rush headlong towards a point where others are waiting concealed down wind. The habits and nature of each varying form of prey, be it buffalo, zebra, antelope or pig, are provided for, and the best method of pursuing and ultimately killing each is selected. Amazing patience is always displayed, and the quarry is often followed by scent for many hours, or even days, until a suitable opportunity presents itself for getting on terms with it. When close quarters are reached sight takes the place of scent, and the eyes of all beasts of prey, especially the cats, show a remarkable adaptability to the amount of light available. The theory which I have once or twice heard propounded, that the hunting is done only by sight, does not appear to have any solid foundation. I have repeatedly seen predatory animals of various sorts, when hunger forces them to be afoot by day, sniffing the breeze for some sign of game being in the neighbourhood, and lions and wild dogs will on occasion work out a spoor like foxhounds. When

Mr. Wolhuter, wounded after his successful struggle with a lion,[1] was awaiting assistance in the comparative safety of a tree, he noticed how the second lion came trotting along with head to earth, nosing out every inch of the ground along which he had been dragged; and it is a matter of common knowledge that one of the best methods of bringing carnivora up to a certain spot is to haul the intestines of a buck in a semi-circle over as large an area as possible. That hunted animals also are capable of divining the presence of their natural enemies by scent there is little room for doubt; but it is a very remarkable thing that a leopard is able to lie for hours within a few yards of a drinking place, or by the side of a game track, without bucks apparently having any suspicion of his presence until he springs out upon one which happens to approach within reach. It may be that the wind is always carefully studied; but I know of drinking places on the Sabi where leopards continually catch impala, and where the spots selected for concealment are so surrounded by the latter when they are approaching and leaving the water that it is difficult to understand how they did not detect the presence of a foe. Certain it is that no human being could thus have evaded notice.

There can be no doubt that, under natural conditions, the existence of a certain number of predatory animals is beneficial to the status of game within any given area, paradoxical though it may sound to say so. The aged and the less fit are killed off, and the herbivora, which, if allowed to increase unmolested, would quickly eat up all the vegetation of a country, are kept within due limits. Obviously, where man, armed with modern weapons, desires to take his share, the candle cannot thus be burned at both ends without permanent harm resulting, and it then becomes necessary to keep down artificially the predatory beasts by every means possible.

Most flesh-eating animals change their ordinary diet only under pressure of hunger. Normally, they prey upon some species which is at once abundant and can be overcome with the minimum expenditure of energy. It is when such food fails, or becomes scarce, that they are forced to take what they can find. "It is true that there are perverted individuals among animals, just as there are objectionable characters among men, and these, by their overt acts, tend to discredit their class as a whole. Yet both are comparatively rare. Nature carefully safeguards the permanency and welfare of a species by making the healthy and virile individuals wary, agile and elusive, so that their natural enemies are forced in the main to content them-

[1] See p. 186.

selves with the less favoured individuals. The wolf that pulls down the sick or enfeebled deer, or the hawk that devours the crippled quail, is really benefiting the species it preys upon, though at the expense of the individual, since, by the removal of the weak and unfit, more vigorous stock is secured and the danger of outbreaks of disease materially lessened. It is demonstrable that, so long as a useful species is kept within bounds, and is not allowed to increase beyond its normal food supply, just so long will it fulfil its natural mission and be of true economic value. If, however, the staple food supply temporarily fails, then, in the effort to maintain life, the animal is likely to become obnoxious." (Extract from the Yearbook of Agricultural Department U.S.A. for 1908, by A. K. Fisher.)

I remember being once witness of an instance illustrating the truth of the last sentence. I had arrived at a native village in Portuguese territory, where the people at once complained to me of the depredations of two lions, which for several months had been practically living entirely upon goats and sheep in the district. It appeared that formerly there had been plenty of game, but it had been greatly reduced by white hunters and the residue exterminated by the natives themselves, most of them being in possession of firearms. There was, therefore, none of their natural kind of prey remaining to the lions, which had become a very serious menace, not only to the live stock, but to the villagers themselves. It is very unusual to find anything of the kind occurring in a district well stocked with game.

There are few sportsmen worthy of the name, I think, who would not consider a game country destitute of its lions and leopards rather a poor place.

Carnivorous animals are not subject to the epidemic diseases which at various times have decimated the ungulates of Africa. They are, however, as has been noted, delicate during youth, and some species are liable to contract the parasitic skin complaints which afflict their domestic relatives.

CHAPTER XII

FELIDÆ—THE LION

PROBABLY there is no wild animal in creation concerning which so much has been written as the lion, and, seeing how thoroughly his habits have been described by those best qualified to speak of them, little appears left to add. Nevertheless, no work on the subject of African animals would be complete did it not include some remarks upon the ways of this terrible meat-eating cat, whose name, in whatever dialect spoken, is uttered with bated breath by the dusky inhabitants of the country wherein he dwells, and whose voice, echoing at night from the depths of the lonely forest, instantly stills the chatter round every camp fire. Originally, the lion was probably entirely an Asiatic animal, but he entered Africa many long ages ago, and has since made that continent so much his home that his name is habitually associated with it, rather than with Asia, where he now lingers locally, and in diminishing numbers.

At the present day lions have been exterminated through human agency south of the Orange River, but in south Africa exist in the northern and eastern Transvaal, Swaziland, Zululand, Rhodesia, Portuguese West and East Africa, Bechuanaland, and German South West Africa. North of the Zambezi they are to be met with in all the less settled areas of the continent, where game is sufficiently plentiful, and the surroundings are not too unsuited to their habits.

Though much has been written descriptive of different local races of lions, considerable observation of them in one area has led the writer, at least, to the belief that the seeming divergencies of type exhibited in the presence or absence of mane, varying distinctness of spots in some adults, relative lengths of tail and so on, are in fact merely so many individual or family characteristics, dependent perhaps upon slight dissimilarities of environment. In the neighbourhood of the Sabi River, for instance, in the north-east Transvaal, where the nights in winter are very cold, practically all the adult male lions are possessed of large bushy manes, sometimes yellow, but more often black or tawny. The bush being everywhere very thick and thorny, a forest life does not appear to have the deleterious

influence on this hairy growth sometimes attributed to it. The animals bearing the blackest manes are usually the darkest in bodily colour, while a tawny or yellow mane is seldom seen except on a light-tinted animal. Cubs out of the same litter often show great variety in hue. Some thirty miles north of the Sabi, where the country generally is comparatively open in character, and where, consequent on the absence of any large body of water, the night temperature is much more equable, male lions are either maneless or possessed of light-coloured manes of small size, while farther north again, near the large Olifants and Letaba Rivers, where conditions approximate more nearly to those obtaining on the Sabi, the lions often have a full growth of hair on neck and shoulders, though seldom of very dark colour. I never saw a maneless lion in the Sabi bush, and seldom a fully maned one in the dry hot country lying between the great rivers. It should be added that, owing to the immense numbers of impala present in the Sabi bush, food is there very easy to obtain, while in the more open country to the north lions certainly go hungry longer, and this high feeding or the reverse may perhaps effect capillary adornment to some degree. As regards spotting, I have seen lionesses of mature age, in some cases quite old animals, killed, which had very distinctive markings on the limbs and underparts, while others again, out of the same troop, showed no indications whatever of spots. Tail measurements vary somewhat, and do not always appear uniformly relative to the length of the body in different individuals. I have seen some lionesses so devoid of rufous tinge that they were almost grey in tone. Individual measurements and weight vary considerably also, and the handsomest beasts are by no means always the biggest. One of the finest maned lions killed on the Sabi was a comparatively small animal, while an immense brute shot farther north had practically no mane at all. Young cubs are covered with soft fur pitted with small dark spots, which begin to fade from the upper parts of the body very early in life. I have a case recorded of a new-born litter of three, entirely lacking these marks. The milk canines are not replaced by the adult teeth until the animals are about a year old, and up to that age the young lion is comparatively helpless as regards fending for himself. The period of gestation is about 108 days, and the cubs are born with their eyes open. In the eastern Transvaal lions generally mate during the late autumn and winter months, that is to say from about the end of March up to the end of July, but there are doubtless many exceptions. Most young cubs are

Lioness (North-eastern Transvaal).

Lightly-maned Lion (North-eastern Transvaal).

Full-maned Lion (North-eastern Transvaal).

met with about the months of August and September, but three newly-born animals were found on the 15th June, and on the 15th November a lioness was shot, which, dying, gave birth to four cubs, all perfectly formed. Again, on 29th April, a lioness was found to be full of milk, and evidently had produced young ones not long before, while one killed on 22nd November had, within her, three embryos so small that they would certainly not have seen the light until late in January. Three appear to be the number of young usually born at one time; but, besides the exceptions quoted above, I once saw a lioness accompanied by four small cubs, and on another occasion two were met which had seven young animals of perhaps six months old with them. However, it seems to be exceedingly uncommon for more than one or two of each litter to arrive at maturity, and, seeing that more than two cubs of over a year old are practically never found with one lioness, I should think the majority die before they attain that age, a result possibly due in some degree to teething or other infantile troubles. On two occasions young lions, between six and twelve months old, have been found newly dead, without any obvious cause to account for their demise. Although lions in captivity are said to breed annually, it seems reasonable to conclude that the periods between litters are considerably longer in a wild state. Up to a year old the cubs are quite unfit to leave their mother; their teeth are fragile things, and, though as big and heavy as the biggest dogs, the young animals have still a long time before them ere they can take the field free from maternal guidance. Indeed, I believe that it takes eighteen months at least before they learn to kill their prey properly, and the care and trouble taken by the mother and her mate in teaching them to do so, as well as the amateur results attending their early efforts, are well known. To complete their education properly it is necessary and usual for the lioness to devote all her energies to instructing them during this period, which would by no means be possible had she another and younger litter demanding their share of protection, and it must be remembered that no animals regard previous offspring after the birth of fresh young ones. I do not think that, during eight years of observation of lions' habits in the Reserve, any of the staff ever noticed a female with cubs of different ages, while lionesses, which, when shot, were found to contain no sign of an embryo, have constantly been seen accompanied by big cubs of between a year and eighteen months old. In such matters facts are of more account than theories, and so a few instances may be quoted tending to show that lionesses pass

considerable periods, during which they are neither bearing nor nursing young ones.

August, 1905. One male and three full-grown females, one of which had two cubs of a month old with her. The other two females were at least two years old.

October, 1905. Lioness accompanied by two cubs of about fourteen months old; she was giving no milk, and contained no fœtus.

November, 1905. One lion and lioness in prime of life, with two younger animals. The old lioness and a young lion were killed. The latter was between two and three years old, and presumably part of the family. The old lioness, in all likelihood his mother, showed no signs of having had cubs recently.

August, 1906. Two lionesses accompanied by four cubs all of about a year old, apparently still under maternal tuition.

September, 1906. Two lionesses, one of which, an oldish animal, had three cubs of about six weeks old with her. The younger lioness was about three years old. Natives said that they had been hunting together for a long time, and when discovered they were both lying up with the cubs, which seemed to indicate that the younger animal was a survival of the previous litter. The young lioness contained no fœtus, and apparently had never produced cubs.

October, 1906. Lion and lioness with one cub of about fifteen months. The lioness had no milk, and contained no fœtus.

November, 1907. A lion and two full-grown lionesses together. One of the latter which was killed proved to contain a very small fœtus. I had known of this same troop for quite six months previous to this, and during that time no young or half-grown animal had been with it.

October, 1908. Lioness with one cub about a year old, she was giving no milk and contained no fœtus.

Such instances as the above could be multiplied largely from experiences either of the writer himself or of various members of the staff, and the conclusion irresistibly drawn is that lions, in their wild state do not breed annually. Even allowing for a mortality so high that all the cubs of certain litters perish, were an annual family the rule, a much larger number of young and half-grown animals would be seen with the troops than is actually the case.

The sexual habits of lions are not greatly dissimilar from those of other wild beasts; that is to say, the young males are permitted to remain with the troop until big enough to arouse the jealousy of the

head of it, which is not likely to occur for at least two years; while young lionesses obviously would be permitted to remain for as long as they thought fit. Therefore, if cubs were born annually, there is no doubt that with every lioness there would be seen not only the last litter still in the weaning stage, but another family of a little over a year old, not yet capable of doing without maternal tuition; perhaps even a third just reaching full adult years. Such cases are, however, never observed, and, indeed, did the animals increase at such a rate, they would quickly overrun any country. A hunter insisted once to the writer that he had seen a lioness with two litters of different sizes; but upon being questioned further, he admitted that he had disturbed a troop containing a number of lionesses, and that, as they ran away in all directions, one of them was followed in her flight by several half-grown, and also some very young, animals. In this case it seems more probable that the smaller creatures got separated from their mother in the confusion, and followed the first female they saw, than that one lioness had two lots of cubs at heel at the same time—a possibility not borne out by ordinary observation.

The mode of procedure regulating the family life of lions is probably as follows:—a single lion and lioness are hunting together, and in due course the female gives birth to three cubs, say, for example, two females and a male. The weaning stage lasts between three and four months, and, during the first part of it, a piece of dense bush, or the reeds near water, is used as a nursery, in which the little ones remain continuously concealed, while the parents, lying up with them by day, at night sally forth to seek food. Little tit-bits are, after a time, brought home for the youngsters, and so soon as they are strong enough, they begin to accompany their parents on short excursions, and the nursery is abandoned. After an animal has been killed, the cubs approach and take their share, the mother often assisting and instructing them. When they are about half-grown they begin to take their part in the killing, acting as seconds to their parents, who see that they come to no harm. It is at this time that great destruction is sometimes wrought among flocks of native sheep and goats by a family of lions. On one occasion while a native child was herding some of the former about a mile from his village, and in broad daylight, a lioness with two well-grown cubs suddenly emerged from a neighbouring donga and fell upon them, killing the whole lot, about twenty in number, in a few minutes. After the first year, when the large canine teeth have shown themselves, and the youngsters have attained not only to

formidable size, but to considerable experience in hunting, the elders often allow them to do the killing, themselves standing by to direct and assist when necessary. An animal killed by young lions is always much mauled and torn, its appearance contrasting vividly with that of one killed in the clean and effective manner distinctive of seniors. On one occasion, when the stock at Sabi Bridge were unlucky enough to walk into a family of lions, a half-grown beast tried to tackle one of the donkeys by himself; but his efforts proved of so amateur a nature that the animal escaped with a few slight wounds. During their novitiate one out of the three cubs originally born, in all probability, will have died from some cause or another, and one male and one female remain. They are now practically grown up, and are able to take their full share of the work. When the male is about three years old his mane is becoming developed, and, in consequence of trouble with his father, he leaves the family circle, and, joining forces with another bachelor a little older than himself, henceforth knows it no more. By this time another litter will have been borne by his mother. The young males, presently feeling the want of mates, roar nightly; they roam the country, until after a while, a young female voluntarily detaches herself from some neighbouring troop and joins them. For a time the three hunt in amity, and then, as sometimes occurs in other societies, the lady causes trouble, and a serious quarrel and fight between the contending swains is the result. The vanquished may occasionally perish in the combat, but more frequently he departs torn and bleeding, to solace himself as best he may in the company of some fresh bachelor acquaintance, while the victor and his bride become the nucleus of a new troop. It is not uncommon for more than one party of lions to be found hunting together, and, at certain times, several full-grown males will be found associated with a troop, though their adherence to it is likely to be of a very temporary nature.

Lionesses with young cubs are dangerous animals to approach, and will, under such circumstances, charge upon slight provocation. Mr. Wolhuter, one of the Sabi Rangers, once came on a large party of lions, three of the females having small cubs with them. His dogs pursued the latter, and he himself was successively charged by all three lionesses, though he described their rushes as demonstrations, rather than determined attacks. Mr. Coryndon, when he was Administrator of Barotseland, was one day riding through perfectly open country, when a lioness lying behind a small bush charged straight at him, and knocked him over horse and all. Having done

so, she immediately made off without attempting to do any further injury, and his impression was that she had young cubs somewhere in the vicinity. Mr. Henderson, who was in charge of the police at Sabi Bridge, stumbled upon a lioness which, instead of giving way, faced him, growled savagely, and showed every indication of charging; this animal was probably in season, as she was accompanied by a male which followed the party carrying the skin right back to the compound, and roared round the station the whole of the ensuing night. Mr. Healy, one of the rangers, sustained a most determined charge from a lioness which he had wounded very slightly, and she, on examination, proved to be in the same condition.

Individuals vary immensely in courage and temperament. A couple of years ago, two native constables on patrol in the game reserve came one evening upon three newly-born lion cubs concealed in the reeds bordering a sand spruit. They picked them up and were carrying them away, when the lioness, which had been sleeping close by, discovered what was going on, and began to growl loudly. She made no attempt to charge, but contented herself with demonstrating from covert. The natives, who were in the open, and had a good start, ran for some distance with the cubs, but, the lioness continuing to follow, still concealed in the bush near the stream, they became frightened, and, dropping their captures, made the best of their way home. Early in the morning, having obtained assistance, they proceeded once more to the spot, and to their surprise found two of the young animals lying half dead from cold, not far from where they had been dropped. The third had been taken away by the lioness, and her tracks were followed for over three miles, trotting all the time. In this case it seems likely that the mother was so nervous of human beings that not only did she refrain from attacking in the first instance, but was afraid to return to fetch the remainder of her offspring, both of which succumbed a few days later to pneumonia, consequent on their exposure in the open during a frosty night.

A terrible adventure befell a trooper of the Transvaal Police during the winter of 1908. He was on patrol with a companion in the north of the Zoutspansberg district, when two Boers were met, bringing, on a waggon, a couple of lion cubs, which they had picked up. Night being at hand, and it being considered probable that the bereaved lioness might make herself unpleasant, the whole party agreed to camp together. In the morning, before the waggon had been inspanned, the police proceeded on their way. The senior,

Eagle by name, a Canadian, and a keen hunter, instructed his companion to proceed with the patrol, while he himself made a détour in hopes of coming across the lioness. He had not gone far when the latter suddenly appeared from a clump of bush by the roadside, and crouched preparatory to springing. The horse refused to budge, whereupon the man fired from its back, breaking the lioness's shoulder. She immediately charged, and pulled Eagle from his saddle. He managed to maintain an upright position, and, being an exceptionally powerful man, grappled with the animal, grasping her by the throat with one hand, and kicking her in the belly with his heavy boots as she reared upon her hind legs. The lioness, for her part, was holding the man's other hand and wrist in her mouth, while her one available paw was over his shoulder, the claws tearing his back. Eagle was unable to say how long this remarkable struggle lasted; but the upshot of it was that the lioness, her severe wound beginning to tell, suddenly let go of him and, going away a short distance, lay down. He then attempted to reach for his carbine, but found himself unable to do so, and then noticed for the first time that his right hand and arm were terribly mauled. Up to this moment he had felt no pain at all; but he now collapsed and fell to the ground, where he lay for some time until assistance happened to arrive, when the lioness was dispatched without further trouble. Eagle was taken down country on the Boer waggon, but, it being three days before his wounds could be properly treated, he died of blood poisoning shortly after his arrival in hospital.

There is no doubt that each troop or family party of lions keeps more or less to a certain district, which it patrols in a very regular manner. During eight years spent at Sabi Bridge considerable opportunities for observation in this respect have offered themselves. About three quarters of a mile west of the station a sand spruit—the Mutshadaka—joins the Sabi. We noticed that lions coming from the east always travelled up river along the banks of the Sabi, and patrolled as far as the Mutshidaka, following the course of this stream up for an uncertain distance, but eventually turning westwards, to reappear at Sabi Bridge from the same direction as before at the end of a month or six weeks. I never knew these animals, which all belonged to one troop, patrol *down* the river, or cross the Mutshidaka to the west, nor indeed did they ever, to my knowledge, appear to come from any direction except the east. There were three lions known to hunt the country some twelve miles up the Sabi from the station, *i.e.*, west of it, and they sometimes patrolled

eastwards to the Mutshidaka, but I never heard of them crossing that stream to our side of it, nor getting into the country hunted by the first-mentioned animals. At Tshokwana, twenty-five miles north of the Sabi, there existed a very well-known troop, which for many months never moved out of a comparatively small area, and even the killing and wounding of members of it did not suffice to scare the others away from their favourite haunts. This particular family were great travellers within their district, and were continually on the move by day.

Lions when moving along at their ease, have rather an ungainly appearance. They hold their heads very low, and their bellies swing from side to side; but the moment they are alarmed, or their attention becomes excited, they are all alertness. I once had the opportunity of watching from very close quarters a couple of black-maned lions approach a herd of impala, which were gazing and snorting at something in the opposite direction. The two lions walked slowly and majestically towards them, their heads held high, looking more like the animals of conventional tradition than any I ever saw before or since. There was no attempt at concealment from the time they emerged from the ravine twenty yards away, where they had been lying. Possibly they recognised that the prey was within their grasp, at any rate they simply walked straight towards it without hurry or noise. This was in the heat of the day, and no doubt lions, when hungry, do travel on right through the hours of daylight with only occasional short rests. In fact, it has fallen to the fate of all the Reserve staff at various times to follow the fresh tracks of lions almost from daylight to dark without once coming up with them. I recollect one day my old stallion "Pompey," getting tired of standing alone with the reins over his head, took a short cut through the bush for home. He was followed by a couple of natives whom he would not allow to get nearer than a hundred yards or so. Suddenly two lions made a rush at him, and he only just escaped by making a tremendous swerve. These animals by their tracks had been on the move, though it was three o'clock in the afternoon and very hot.

Although lions thus frequently hunt throughout the day when hungry, and although, as the instances that have been quoted show, they may then, under certain circumstances, prove dangerous to man, normally they will give way before him. One of the rangers while following lion tracks once walked right into the middle of five while they were lying sound asleep in some long grass. The

animals sprang up and rushed away, and so close were they that a lioness actually knocked one of the natives down with her hind-quarters; but they made no attempt to injure anyone, their energies appearing to be concentrated only upon escape. In my experience there is much less risk in following up a slightly wounded lion when he is in company with others than when he is alone. He then seems to feel a sense of security from the neighbourhood of his fellows, whereas by himself he considers that he is in a "tight place," and must defeat his enemies at all cost. However, it is quite impossible to anticipate individual action. After having killed a lioness I followed her mate into some very thick bush, and got a snapshot at him which it was assumed had missed. After pushing our way to the spot where he had been standing the "boys" and myself were peering about to see which way he had gone, when he was heard to crash away from behind a thorn bush not five yards distant, behind which he had been lying down. Here traces of blood on the leaves proved that he had been wounded, and there is not the slightest doubt that had he been a courageous animal, or had he belonged to the other sex, one or other of us would have paid some penalty for our rashness. Many natives display the utmost temerity in following wounded lions, and take risks which no experienced white man would care to undergo. In some cases this is due to want of imagination or experience, as is proved by the excessive caution the same men will display subsequent to having practical proof of a lion's capabilities. Wolhuter, in company with a young friend who had no experience of the animals, and five native trackers, all of whom were carrying spare rifles, once followed up a slightly wounded lioness. Feeling a severe attack of fever coming on, Wolhuter was constrained to turn back after going a few miles, but before he left the party he warned them to take no undue risks. However, sometimes with the aid of a very good and plucky dog which accompanied them, and sometimes by firing the clumps of reeds and grass in which she from time to time took shelter, they drove the lioness from one refuge to another without being able to get a shot at her, until she was worked up into a very bad temper indeed. At last they got her into an isolated patch of bush, whence she could not escape except in full view of the party. The dog went in, and was killed at once, upon which the white man formed his party in line about fifty yards from the edge of the covert, and, all having prepared themselves, they began to throw stones in. Suddenly, like a streak of light, the lioness came. All

fired, and all missed. In the wink of an eye she was on them, knocked the native at the end of the line over, and then seized the one next to him. The whole party apparently fell over in a heap, the white man getting entangled with a thorn bush, so that he could not use his rifle. Fortunately an old native hunter who happened to be furthest from the lioness, kept his head, and, inserting a fresh cartridge into his martini, shot the animal dead before anyone was fatally injured. I think all of them fully realised from that time that a wounded lion is not to be trifled with. Once a charge is in progress or imminent the hunter must rely on straight shooting alone to save him ; but even should he unluckily miss, standing perfectly still may possibly benefit him. Ranger Healy was charged by a lioness which he missed when she was about twenty yards away, and coming fast, straight at him. He had no time to push another cartridge into his single-loading ·400, but he stood quite rigid. At the last moment, and when not more than three yards away, the animal suddenly swerved, and, passing round him to the left, turned when she had gone seven yards, and lay down facing him, her head on her paws and her tail twitching up and down. He then killed her. As a rule, lions run away after being wounded and only charge when followed up, but this cannot always be depended upon, and some, especially lionesses, will come almost on the shot.

One day a ranger (Mr. Healy) was riding along the path about a hundred yards ahead of his waggon, between which and himself were being driven seven pack donkeys. It was about 4 p.m. and he was not far from one of the rest camps which are built at intervals along most of the main routes in the Game Reserve, when he suddenly heard a cry of " Lions ! " and, turning round, saw a lion in the act of rushing at the donkeys, and not more than twenty yards from them.

On his firing, the animal stopped, and, wheeling about, walked quite slowly away when a second bullet killed it. It proved to be a young adult male, very emaciated, its pads full of porcupine quills. No doubt porcupines are indirectly responsible for the deaths of quite a large number of lions ; the latter are either specially fond of porcupine meat, or else young inexperienced animals, seeing in these rodents apparently defenceless and easily caught prey, are tempted to seize them. Upon being attacked, the porcupine, having recourse to his only method of defence, discharges his sharp quills into the body of his aggressor, and the paws, which are the instruments mainly used for seizing the prey, receive in their pads a large

proportion of the spines. Keen as needles, these gradually work their way into the foot, and set up severe inflammation and festering, thereby partially or entirely preventing the lion from getting his livelihood. Old lions are seldom found to be suffering in this way, unless, indeed, they have reached such a state of senile decrepitude that it may be presumed they were forced to take the first chance of an easy meal that offered. On the other hand, quite a considerable percentage of young lions and of those in the prime of life are discovered to be thus partially incapacitated, and are often mere skin and bone, showing that they have been unable to hunt, or, at least, catch animals, on account of their injuries. It appears to be very exceptional, however, for females to commit this imprudence, possibly because they are accustomed to hunt in company, and seldom go about alone, as males often do. A great many male lions have a few porcupine quills sticking in their bodies; but, if lucky enough to escape serious injury on the first occasion, they no doubt either give up the dangerous amusement, or take care that the more vulnerable parts of their anatomy do not suffer. Shortly after the conclusion of the war a party were travelling near the Olifants River, when a lion sprang from the side of the road upon a pack horse; so weak was he, however, that the horse threw him off with ease, and when shot he was found to be a mere skeleton, his feet in the most appalling state from the effects of porcupine quills. This was a lion in the early prime of life.

As lions move through the bush on their rounds they travel at a steady pace of about two-and-a-half miles an hour, sometimes increasing it to a jog trot of a mile or two more, and occasionally halting to roll. They sharpen their claws on tree trunks, and squares of bark may be seen thus pulled off at about four feet from the ground.

They are capable of covering very large distances when on the move, and no doubt their activity is largely measured by the fulness or otherwise of their stomachs. They often appear to rest for a considerable time even during the night, so far as may be judged by the appearance of the "forms" next morning. Early cock-crow is a favourite drinking time, and, whether they have just enjoyed a meal or not, it seems usual for them to slake their thirst at least once in twenty-four hours, though seldom two nights running at the same place, at least where water is at all plentiful. Their methods of hunting and killing large animals have been so well described by Mr. Selous and others that it is a work of superero-

Lion Cub (North-eastern Transvaal).

Lioness and Cubs.

gation to add anything to what they have said. They prey on all the greater herbivora with the exception of the pachyderms, and, as has been related in a previous chapter, one instance of an attack on full-grown hippopotamus came under our notice. The dead victim is always *dragged* to the spot chosen for a meal, never *carried* unless very small. When they are hungry, very little comes amiss. One of the rangers, when camping out, had a lot of traps set for small wild cats, which he had baited with rats. A couple of lions one night went the complete round of the traps, and took every single bait away! While the writer was staying at one of the outlying picquets, a pair of lions came round the camp at night and tore up a sack which contained some porridge, besides breaking a calabash which had mealies in it, in both cases obviously with the object of getting at the contents. Much the same thing happened one night on the Sabi, when a party of lions demolished a sack of mealies which had been left in the bush some fifty yards from Major Fraser's waggon; on this occasion the greater part of the contents were simply strewn on the ground. Still more vitiated was the taste of a lion which consumed entirely a very much soiled flannel shirt, the property of a native. Finding it laid out near the water wherein it was proposed on the morrow to purge it of its odoriferous quality, he at once recognised and treated it as a delicacy. Lions have no objection to carrion, indeed they rather prefer having their meat killed for them than being at the trouble of catching it themselves; nor does the fact of the carcase being "high" (to use a euphemism) act in the least as a deterrent. I recollect once setting a number of traps round a dead horse to catch hyænas. About the third day the air was tainted for a very long distance down wind, and these scavengers began to collect from far and wide. On the next night a lion came; got temporarily caught in one of the traps, and, whether in his natural annoyance thereat, or in resentment at having been led by the hyænas into a dangerous place, incontinently slew a couple of the unfortunate animals.

Lions have no scruples in bullying other and smaller members of the cat tribe when opportunity offers. On one occasion three of them had apparently lain up for the day under the shade of a tree, just where a female serval cat with three young ones had made her lair. The kittens being too small to run away, the lions killed all three, seemingly in pure wantonness, as they did not eat them. Another time we were following up some lions when we came to a spot where a leopard, having killed an impala, had being enjoying a

meal. The tracks showed that one of the lions had made a rush, whereupon the rightful owner of the meat had made the best of his way up the nearest tree, there to remain angry but helpless, while the intruders were consuming his hard-earned spoils.

It is a fortunate thing that full-grown lions are unable to climb; but a young and light lioness will get quite a good way up a tree, especially if the trunk be slightly aslant, and cubs can climb quite well. The latter often take refuge thus from dogs. I have a clear recollection of how I placed two little beasts of some six weeks old for safety in an enclosure, while a cage was being constructed for them. The enclosure had corrugated iron walls some ten feet high; but, on returning in half an hour, I discovered one little wretch poised on the top, while the other had disappeared never to be seen again. He was traced over the river, which was three or four feet deep where he had crossed, and had a fairly strong current. Certainly the strength, intelligence and initiative shown was most remarkable in so young an animal. Lions are great swimmers, and have little of the rooted objection to water observable in domestic cats. They constantly cross both the Sabi and the Olifants Rivers, which are, each of them, deep and swift-running streams. Two instances out of many occur to me. One morning we left camp early, hearing two lions roaring loudly one on each side of the Sabi. After a fairly long walk we came on the tracks, and eventually put two male lions out of the reeds by the river side. The one which we shot had evidently just crossed the river, as the water was dripping from all over his body. The stream here was deep in places, and the two, obviously mates, had been hunting, one along each bank, for part at least of the night. On another occasion Captain Slatter and I were following the spoor of two lions, which eventually led us right down to the Sabi, which they had crossed at a particularly wide and deep place, the river moreover being in partial flood at the time. We ourselves had to go more than a mile down stream before we could find a possible crossing. As these animals were hours in front of us it was certainly not alarm which induced them to go straight across the river just at the place where they happened first to strike it.

Cases of cannibalism occasionally occur. Mr. Healy, one of the Game Reserve rangers, came upon two lionesses and a lion near kilometre 102 on the Selati Railway. He shot the lion, which was a young adult animal, and then proceeded to sit up over the carcase of a wildebeest which the animals had killed. This lay close

to the foot of the tree in which Healy had taken up his position, while the remains of the lion were about a hundred yards distant. During the night one lioness returned; but, instead of coming back to the "kill," she lay up by the carcase of her mate, remaining there until shortly before dawn. In the morning it was found that she had torn out, and half-buried the intestines exactly after the method customary when dealing with ordinary game. She had also eaten the softer parts, including the insides of the thighs, and the kidneys. She had pulled out, but not eaten, the liver. A message was sent to headquarters, and I arrived during the afternoon, when I personally saw what has been described. I sat up the following night, but the lioness returned no more.

Like all the predatory animals, lions are very much bolder by night than by day, perhaps feeling instinctively the advantage which they then have. It is on dark and rainy nights above all that they are to be feared; when the moon is near its full, and so sheds a brilliant light, they are little more dangerous than by day, and unless really hungry seem then to do little hunting. A story is told of how in Mashonaland, shortly after the rinderpest, when want of food had made these carnivora especially enterprising, several police troopers were at dinner one night in a hut. Hearing a disturbance among the horses, which were in an impromptu stable, some ten yards distant, one of them went out to see what was the matter. He had scarcely stepped outside the door when a lion sprang upon, and instantly killed him. My friend, Major W——, once sat up over a lion "kill." He had a shooting hole dug, of some three feet in depth, and covered over with logs of wood and branches. Having fallen asleep, he was suddenly awakened to the consciousness that at least one lion was sitting actually on the top of his hiding place, within a few inches of his head! He was also somewhat disturbed at noticing that the weight of the beast was gradually breaking down the edges of the pit, so that the sand was running into it, and there seemed no small possibility of the whole roof shortly giving way. Luckily, the animal soon got up and walked over to the "kill," but the moment my friend put his head over the edge to try and get a shot, it returned with a rush, growling savagely. So soon as the head dropped out of sight, the lion went away; but the same procedure was followed on each occasion when the man showed himself, so that he spent rather an anxious time. Ranger Duke, too, once spent a very bad night in the Game Reserve. He had camped at sundown by the bank of a small sand spruit, and had, as

is our invariable custom when travelling with transport animal
erected a thorn fence within which he, his three natives, his hors
and his four donkeys, were enclosed. It was a pitch dark nigh
and presently a troop of lions came up the spruit and laid dete
mined siege to him. One or another would every few minutes mak
a rush up to the "scherm" and try to get at the animals, onl
retreating before the shouts of the boys and the shots from the whit
man's rifle. The fire had gone out, and there was no wood to mak
a new one. The lions kept up an intermittent grunting clos
around, as if in the hope of stampeding the animals, which it too
the united efforts of the whole party to restrain, and it was more
over so intensely dark that nothing whatever could be seen. Th
unpleasant episode continued almost until dawn, which wa
naturally welcomed heartily by everyone concerned. These lion
apparently displayed no nervousness of human beings whatever
This conduct is, however, by no means invariable or even usua
Major Fraser was once encamped on the Letaba under very simila
conditions. The night was very dark and rain was falling. Th
slumber of no one was disturbed; but in the morning the impression
in the soft ground showed that some lions had crept close up an
had then sprung back as if alarmed, apparently repeating the pro
ceeding several times before departing. Major Fraser believed tha
the bells which were hung round the donkeys' necks had th
effect of scaring away the marauders, and I have known this occu
in the case of trek oxen, one of which usually has a bell attached t
his neck, so that the animals may not be lost when grazing in th
bush. In former days, when waggons used to proceed by roa
through the low country from Delagoa Bay to Lydenburg, certai
places along the route had a very bad reputation. In order t
avoid the tsetse fly it was necessary to trek by night part of th
way, and, near the Entumeni River, lions would often spring o
the span and kill one of the oxen while actually travelling, doing i
moreover, with complete impunity, because, fearing the fly, th
transport riders were forced to push on through the belt befor
morning, and so had no time to stop and punish the marauders.

Purely game-eating lions, which have little or no experience o
man and his domestic animals, are certainly, as a rule, comparativel
timid, even at night, when in human presence; but it is almos
impossible to anticipate how different individuals or parties wi
act. Mr. Healy once tied up a goat and sat over it at a kraa
where, during the two previous nights, lions had made unsuccessfu

attempts on the native stock. About 2 a.m. the lions arrived, and could be heard grunting and walking about quite close. Although the goat bleated continuously they took not the slightest notice of it, but moved into the village and round the huts, even lying down and rolling when they found a soft place, but always keeping away from the actual spot where Healy sat, so that he never got even a glimpse of them. After an hour or so they went quietly off. The natives said that they could "smell the gun!"

When forcing their way into a cattle or goat pen at night lions do not jump or climb over it, but attempt to push their way through underneath, and it is surprising how dense a wall of branches, or even of thorns they can penetrate if given time patiently to push and pull aside the obstructions. A barbed wire fence, being an impediment strange to an unsophisticated lion, often gives him pause, and one morning at Sabi Bridge the tracks showed how, during the night, a lion had patrolled round and round the five-strand fence without being able to summon the confidence to cross it, although it was very loose in several places. In escaping when alarmed lions will, as Mr. Selous points out, dash over or through almost any kind of obstacle.

Sitting up at night over a "kill" is often interesting as a means of observing the habits and methods of these cats. Two lionesses and a lion returned to the carcase of a waterbuck over which one of the rangers was sitting. He watched their movements for a long time before firing, assisted by the light of a quarter moon. The smaller of the lionesses kept both the others from the meat, chasing them away whenever they attempted to approach. After a time the ranger killed the small lioness, and badly wounded the other, which crawled away. The lion at first rushed off, but presently returned, and commenced to run round the body of his dead mate with every sign of agitation, uttering a low, moaning noise. Whenever his path led him close to her, he shied off exactly like a horse, stood looking intently for a moment or two, and then continued his movements. On being fired at he decamped for good. I once sat up at a place where in the morning a troop of lions had been disturbed and two of them, including a lioness, killed. It was hoped that her mate might perhaps come back during the night to seek her, as he would very likely have done had she been his only companion; there being, however, two other lionesses in the party, he perhaps did not feel sufficiently lonely, and so the vigil was a vain one. During the hunt the lions had been scattered in different

directions, and about 10 p.m. began to call to each other. One lioness first began roaring about a mile to the east, followed quickly by another, a similar distance to the south. After a time the male, apparently lying in a sandspruit some 500 yards from where I was stationed, began to answer, but, while the two lionesses roared almost continuously through the night, he contented himself with uttering single deep grunts at irregular intervals, his tones being easily distinguishable in their deeper and rougher note from those of his mates. Towards morning the whole party joined forces, and about dawn went away up the sandspruit, roaring loudly in chorus.

The distance at which lions may be heard, varies, of course, according to the direction of the wind, the state of the atmosphere, the nature of the country, and the position in which the animal happens to be standing relative to the listener. At dawn on a still morning, which is likewise the time at which they are most frequently heard, the sound undoubtedly carries a very long distance. I remember going after some lions from a camp where I had been sleeping, and which was five miles from home. The animals were roaring in unison a mile away on the opposite side of camp from the station, but the people there told me, on my return, that they had heard them distinctly. It is often very hard indeed to gauge how far a lion may be distant from the sound of his voice. Often an animal which is believed to be quite close in reality is several miles distant; while it happens now and then that a faint sigh or grunt, which seems to come from far away, actually proceeds from one which is close at hand. Lions, of course, do not roar, or, in fact, make any sound at all when working up to game. No mice could be more silent than they are when thus employed. But when the exigencies of the chase appear to demand that the quarry shall be stampeded or driven in a required direction, to a spot, for instance, where others members of the troop may be lying in wait, a very great deal of noise is sometimes made. Two lionesses once tried to stampede my trek oxen out of camp in the middle of the night. They were afraid to come very near, as the natives were awake, and the dogs barking. Therefore, while one made a circuit of the camp and lay near the path on the down wind side in perfect silence, the other, letting the oxen get her scent, roared loudly and continuously for a long time. In general lions roar after killing, perhaps to summon other members of the troop which may have gone in some other direction; in going to and returning from water they are

generally noisy, while, especially where unused to being disturbed, they frequently, perhaps usually, utter a few grunts, and an occasional roar, preparatory to lying up for the day. On dull, cool mornings I have heard them up to 10 a.m. Various writers have expressed their opinions as to the majesty or otherwise of the lion's roar. I suppose it appeals to different people in different ways, and according to the circumstances under which it is heard; but there can at least be no doubt, the ostrich notwithstanding, that it is something quite unique, and once heard cannot easily be forgotten. Personally, I think nothing can be more impressive in the dead of a night spent amid some desolate African wilderness than the long-drawn cadence of the opening note rising and falling, and then merging into the succession of deep bass "woofs" which become fainter and fainter until they are scarcely audible sighs. When a number of lions roar in chorus the very earth seems to vibrate with the volume of sound, and the contrast with the dead stillness which follows is very remarkable. There is no doubt that, after a certain amount of practice, the ear learns to pick out the lion's voice, however faint and far removed it may be, among any number of conflicting noises and bush calls which, from their proximity, would, it might be supposed, easily drown it.

Lions, when disturbed during the day by human beings, act according to their previous experience. Where unaccustomed to being hunted they give place slowly, and, as it were, under protest, walking away with frequent halts to look back, and increasing their pace only when out of sight. But where they have learned to dread man they often spring up and dash off at full gallop without a backward glance, uttering a succession of rumbling grunts as they go. When lying up by day lions like to seclude themselves in some thick patch of bush, reeds, or grass, where the surrounding country is open or only lightly forested, that they may see all round while themselves concealed; but where the forest is everywhere dense they usually prefer to lie under some small bush or tree in the middle of the most open space they can find, thus placing field of view before concealment. When lying down, even right in the open, they are often extremely hard to see, and are sometimes betrayed only by their back-tipped ears.

Like other predatory animals, nature has so fashioned these cats that they are able to go for considerable periods without food. Stomachs have again and again been found to hold as their only contents hair of some animal swallowed at least five days before, and

therefore, excepting in places where game is so numerous as to be caught with little exertion, it seems probable that the number of creatures destroyed by a single lion in a year is less than is generally imagined.

In south Africa cases of man-eating have always been comparatively rare, probably in consequence of the bold and virile nature of most of the native tribes, who would seldom permit the destruction even of a goat to pass unpunished. There are, however, a few stories, dating from the days before the white men came, still current in the Transvaal low veld, showing that lions had then considerably less respect for man than at the present day. A tale is related of how a lion once got into a native hut which contained a small child, the mother having either managed to make her escape or being absent at the time. The villagers set fire to the wattle and grass walls, whereupon the lion escaped through the roof. The child was burned to death. The only authenticated local case of man-eating which I know of in recent years occurred during the war, at Sabi Bridge. A picquet of an irregular mounted corps had just arrived to take up permanent quarters and were bivouacking in the open round a fire. One of their number (Smart by name) was on sentry duty, and had apparently gone a few paces away from the fire when a lion sprang on him and carried him off. His cries aroused his comrades, who, seizing their rifles, fired a volley in the direction of the sounds causing the lion to drop the man and make off for the time being. Though uninjured by the bullets, Smart died a few days later from the wounds inflicted by the lion. Undeterred by its reception, the animal returned some hours afterwards, this time visiting the natives' fire, and succeeded in abstracting one of the sleeping forms without arousing anybody. Luck being with it, it got the victim safely away and ate him. It is satisfactory to relate that this dangerous brute was killed a few weeks subsequently by the well-known hunter, Mr. Francis, who at that time was serving with the corps in question.

Man-eating lions in Africa do not seem so often old and decrepid as tigers pursuing this means of earning a livelihood are said to be in India. The lion mentioned above was a fine black-maned beast in the prime of life, and the notorious man-eaters of Tsavo were both in the full flush of health and strength. Nevertheless, lions killed while making night attacks on native goats have frequently been found very old and almost toothless, and these, no doubt, would have become man-eaters, given the opportunity. In the story I am about to relate, although one of the lions was certainly old he was,

nevertheless, possessed of full vigour, while his companion was quite a young animal, so far as could be judged. This incident has been recorded before, but is so very unique and altogether remarkable that, especially seeing I can vouch for the exact truth of every one of the facts, I make no apology for telling it again.

In August, 1903, Mr. Wolhuter, one of the Transvaal Game Reserve rangers, was returning from a month's patrol to the Olifants River, and had arrived within two days' march of the Sabi. He had pushed on alone ahead of his natives and pack donkeys in order to reach the nearest police picquet, if possible, before nightfall. However, darkness found him still some three miles from his destination, riding along a path by the side of a reed-bordered stream, accompanied only by his big dog "Bull." As he rode through the dry bed of the spruit where the path crossed it in one of its windings, he saw something move out of the reeds and melt away into the darkness ahead. A few yards further on the dog rushed forward barking, and again an indistinct form moved away. Conceiving it to be a buck of some kind, Wolhuter rode on without taking any special notice of the incident; but a few minutes afterwards he suddenly saw the shape again, this time apparently approaching. He had scarcely time to reflect that this was an odd action on the part of a reedbuck, when he became conscious that it was no antelope, but a lion in the act of crouching for a spring. Pulling his horse sharp to the left just as the lion rushed, he caused the latter partially to miss his mark, but the claws tore down the horse's quarters, and the terrified animal, making a strenuous leap forward, shot Wolhuter over its right shoulder straight into the jaws of a second lion, which had been coming up from behind. Horse, man and rifle all went in different directions. The horse made off at full speed, followed by the first lion, which in turn was pursued by the dog, while the man said afterwards that he never touched the ground at all, as the lion seemed to catch him in mid-air, the first thing he realised being that it was trotting off with him down the path. He was held firmly by the right shoulder, and, lying on his back, his face was on a level with the brute's neck, while his legs were dragging along under its belly. It was a desperate predicament, and, so soon as he was able to collect his thoughts a little, his mind kept dwelling on whether he would be killed outright or tortured first. He saw no hope of escape. The pain he describes as acute, which is contrary to the related experiences of Livingstone and others. However, being a very cool

and experienced man, and full of "grit," he presently began to cast about for some method of saving himself. The mind works quickly in such cases, and suddenly he remembered his sheath knife, an ordinary six-inch blade which was carried in an open leather case on the back of his belt. Reaching underneath himself with his left hand, he discovered that the knife providentially had not been lost during the fall and the subsequent dragging, so, pulling it out, he concentrated every energy on holding tight on to it, and awaited a favourable opportunity. Fortune favours the brave, and his chance came when the lion, after going with him about 150 yards, laid him down under a small tree, either for the purpose of shifting its grip or of commencing operations. Feeling very carefully behind the left shoulder for what he judged to be a vital spot, Wolhuter then struck a couple of back-handed blows with all his force, using, of course, his left hand. It turned out subsequently that each of these strokes reached the heart. The lion remained stock still for a second, and Wolhuter then plunged the knife upwards into the throat. At this the animal, now streaming with blood, sprang back several yards and remained facing him. Wolhuter scrambled to his feet, and for what seemed to him hours, but was, no doubt, little more than a second or two, man and beast stood facing one another, the latter silent, and the former, with some hazy idea of the power of the human voice, using every opprobrious epithet which rose to his tongue. The tension was relieved by the lion turning and walking slowly away to a spot some thirty yards distant, where, after a few groans, it expired. Wolhuter meantime made shift to climb the tree under which the incident had taken place, a task not facilitated by his mangled arm. Having painfully ensconced himself in the lower branches he began to feel faint, and, fearing he would fall, he secured himself as well as he could by the large handkerchief which he had been wearing round his neck. It was well that he had not remained on the ground, for soon the other lion returned from an unsuccessful chase after the horse, and, arriving at the point where the attack had been made, followed the spoor of Wolhuter and its mate to the foot of the tree. Whether it would have succeeded in pulling him from his perch or not is uncertain, the branch being not much more than ten feet from the ground, but at this moment the dog came up and began a furious assault on the lion from behind. This effectually kept the latter employed, as on each occasion when, after having driven away the dog by a rush, it turned to Wolhuter, it was only to find itself once more assailed in rear.

While this was still going on, the "boys" and donkeys came on the scene. Guns were fired, lights brought, and Wolhuter released from his position. The three miles to camp he speaks of as one of the most appalling times he ever went through. He dressed his wounds as well as he could, with the assistance of his servants, on arrival there. Next morning the natives found the dead carcase of the lion, and brought in the horse, which, though but slightly injured, was never any use afterwards for bush work, its nerve being completely ruined. Wolhuter himself was carried down country, and arrived in Barberton Hospital about a week later. A naturally strong constitution, and the fact of his being in very hard condition at the time of the accident, eventually pulled him through; but blood poisoning set in, as it almost invariably does when wounds received from carnivorous animals are not quickly and scientifically treated, and it was many months before he was able to resume his duties. Talking over the matter afterwards, Wolhuter gave it as his opinion that the lions were stalking the horse, and possibly were even unaware of his presence until he actually fell into the jaws of one of them. Almost certainly neither of these lions had ever tasted human flesh, such a thing as a native being carried away by a man-eater not having occurred in the district for many years.

Next to the above, I think the most thrilling personal narrative of an adventure with a man-eating lion at night that I have ever listened to was told me by my friend Mr. Coryndon. One dark and rainy night his tent was pulled from over him, leaving him lying under the wreck of the poles and mosquito curtain, and was found in the morning, torn to pieces, half a mile away. However, I refrain from telling the story at length, hoping, in common with his many friends, that Mr. Coryndon may some day be persuaded himself to place on record some of his many adventures amongst dangerous animals.

Although it is a very exceptional thing to come across lions by daylight, unless one is actually hunting for them, newcomers to a game country always seem to expect to meet the animals at every turn, and their imagination often plays them curious pranks. A very young trooper of the Constabulary once arrived at Sabi Bridge in a state bordering on panic. He had met a lion in the middle of the path. Some doubt being felt on the matter, he was asked to describe it, and replied that it was as big as a bull, black, and had *horns!* On another occasion a ganger on the railway came

speeding on his trolley into the nearest station to say that he had been "held up" by three lions a mile down the line. A number of the bolder spirits armed themselves and set forth; but, on arriving at the place, found nothing but a father, mother and baby warthog quietly feeding. Another new hand was once riding from Komati Poort to one of the neighbouring stations. He became benighted, and described how he was so set about by lions that he was obliged to climb to the top of one of the old disused blockhouses and spend the night there, while the savage beasts raged about near the foot. Strange to say, the horse, which was tied up to a tree near by, was not only uninjured, but was so unobservant as apparently not to have noticed any sign of danger. Warthogs and waterbuck cows especially seem to have the power of imposing upon the imagination of the novice in the Transvaal low veld, and I have known the grunting of an impala ram, and even the booming of a ground hornbill, send white men up trees with great rapidity. When the Selati Railway was being reconstructed in 1909, the men on the construction train saw the large troops of impala which are generally to be found about the line near Sabi Bridge. Nothing would make them believe that these animals, which, of course, they saw at some distance, were not lions, and they evidently were thoroughly convinced that their safety was due solely to the fact of being on the train. It is a remarkable thing that in the course of the hundreds, probably thousands, of times members of the Game Reserve staff travelled up and down the Selati line between 1902 and 1909, lions were not seen on more than three or four occasions by day, and yet I can hardly recall a single instance of a stranger arriving by the same route at Sabi Bridge whose passage, according to his own account, had not been disputed by one or more of these animals. Verily, fancy has the power of leading even the most truth-loving individuals along strange paths!

Should his career not be prematurely cut short, the ultimate fate of the lion is rather pathetic. Having for years roamed the forest, his supremacy unchallenged by any other of its wild denizens, he at length grows old; his fangs become worn down to mere stumps, his bodily powers deteriorate, and he is no longer able to capture his ordinary prey. If a male, he has long ere this been driven away from the family party by younger and stronger rivals, and has since led a solitary and anxious existence. At length the time arrives when he finds himself compelled to exist only on such small mammals as he can pounce on and easily kill; he becomes gaunter

and weaker day by day, until, unable to seek food of any kind, he lays himself down, a sad spectacle of departed glory, and a prey for the hyæna, the jackal, and the vulture. Females remain longer associated with their comrades than males; but they, too, at last become unfitted for the strenuous, wandering life, and their end is the same as that of the other sex.

CHAPTER XIII

FELIDÆ (*continued*)

The Leopard—The Serval—The African Tiger Cat—The Black-footed Wild Cat —The African Wild Cat—The Caracal—The Hunting Leopard.

THE Leopard (*felis pardus*).—The leopard is the most widely distributed of all the larger cats, being found at the present day throughout a considerable portion of Asia and most of Africa.

Thanks to its intensely secretive and strictly nocturnal habits, as well as to its natural cunning and its comprehensive diet, it is always the last of the larger carnivora to vanish from areas opened up by civilisation, and long survives the final disappearance of the big game.

Seeing that individual leopards are so intensely local in habit, and seldom, unless forced by hunger or other cause, leave their own particular section of hill or forest land, it is remarkable how very slight has been the variation in type, not only throughout Africa itself, but between the animals indigenous to that continent, and those of Asia. Naturalists separate the leopards of Africa into a number of local races, distinguished from one another chiefly by their size and by the formation and distribution of the spots; but the intermediate forms are innumerable, nor is there any reason to suppose that the most apparently divergent types represent anything more than the influence of a widely separated habitat and conditions upon the same animal.

In the north-eastern Transvaal, for example, there are two types of leopards, the extremes of each variety being very distinct from one another. That found in the hot, low-lying bush country is a long, lanky animal, rufous in general colouration, having a short coat and relatively small and clearly defined rosettes; it is known to the natives as "*m'balana*" (the small spotted). The other, a native of the hill country to the west, and met with at a height of about 2,000 feet and over, is of a lighter hue; the spots are larger and less distinct, while the hair is much longer. The animal itself is, I think, usually rather heavier, though possibly not quite so long in the body as its low country brother. The natives call it "*Idzimba*."

However, I am convinced that these superficial differences merely represent the result of possibly a few generations of adaptation to environment. At all events, the nearer they are met with to the hills, the more closely do the leopards approximate to the upland type, and *vice versâ*. Cases of melanism occur occasionally, though far less often in Africa than in Asia. Among many hundreds of leopard skins which I have seen in the eastern Transvaal, I never noticed one showing the least tendency in that direction.

In all forest countries which are well stocked with their natural food leopards are undoubtedly much more numerous than the traveller, as the result of mere casual observation, might suppose to be the case. They are seldom seen, and never heard by day. Accustomed to lie up in the densest thickets, they slip silently away at the first hint of approaching danger; and it is only when accompanied by dogs, or by the merest chance, that the hunter happens upon one during his wanderings through the bush. In the Sabi, the sandy bed of almost every dry spruit bears daily witness to the patrolling of one or a pair of leopards during the past hours of darkness, and it is remarkable how individuals cling each to his or her own section of country. It has happened again and again, that, when a leopard has been accounted for in some piece of bush or sandspruit, where nightly tracks and numerous "kills" have long borne witness to his presence, the range has remained tenantless for a considerable period, perhaps even for months, though, should conditions be favourable, it has, sooner or later, been taken over by some new arrival, some animal which recognises in it an improvement on a previous hunting ground, or which, emancipated from maternal control, is setting up for itself. During the dry season leopards seldom range far from the neighbourhood of the permanent water; but, as the spring rains fill the forest pools, and there is a general migration of the herbivorous animals from their relatively restricted winter quarters to the more ample feeding grounds now open to them, the leopard, too, feels the necessity of a change of quarters. Rising from his lair in the reeds hard by the impala drinking place, he stretches his limbs and rolls sinuously for the last time in the bed of rotten leaves under the *m'hobo* tree—scene of many a hearty meal. Then, after a few stealthy glances round, he silently moves off inland to the neighbourhood of one of the small forest pools, where the adjacent dense thorn bush promises a secure day retreat and favourable night ambush.

Leopards generally lie up during the day in the thickest covert

they can find, reeds, bush, or long grass. When their lairs are rocky krantzes and kopjes, where the midday sun beats down upon the sparsely covered rocks so that the surface becomes almost red hot, they like to creep into caves and crevices, where they lie sheltered until the cool, dark hours arrive. In the Transvaal low country, where abundance of good bush covert exists, I have not found that leopards patronise the kopjes and rocky outcrops which are studded over the country at frequent intervals. Now and then they go to such spots at night in order to hunt the baboons which make their homes there; but apparently do not favour them as day resorts, and far prefer the cool reed or bush-clad banks of some forest pool or stream. Occasionally their day may be spent up some leafy tree, lying extended along one of the great horizontally-growing branches. Leopards are essentially nocturnal beasts, and, of all the larger carnivora, are probably the least frequently encountered in daylight by the sportsman. Fortune smiled on one of the staff at Sabi Bridge, when he nearly walked on to one stretched asleep across a game track; but, his rifle being unloaded, he failed to live up to his opportunity. A similarly annoying episode occurred in my own experience. I was wheeling a bicycle through a difficult bit of road in Uganda, the gun-bearer fifty yards behind with the rifle, when a fine leopard walked out of the bush within a short stone's throw, and quietly crossed the road, either not seeing, or completely ignoring us. This was about 11 a.m. on a hot morning, a most unusual time for a leopard to be on the move. The moral is obvious. In the African bush no matter how unlikely the situation, never be without your rifle in your own hands, and never let it be unloaded. The neglect of this elementary principle has been the cause of many a disappointment; but, as the experiences of others are seldom taken to heart, it is probable that in the future each novice will have to learn the lesson for himself at the price of some coveted trophy. One morning, three or four years ago, Ranger Healy and I were walking through the bush. Accompanying us was a little fox terrier, which, at a certain spot, began to nose about, and then ran into a thicket on the right of the path. After a few moments, Healy, who happened to be a little behind, saw it rush out, closely followed by a leopard. The dog dashed straight towards him, and its pursuer also came right on, until only some five or six yards from Healy. It then, perhaps seeing him for the first time, stopped abruptly, and sprang behind a bush, where it received a crippling bullet. We subsequently discovered that this leopard had been lying up by a dead impala ewe

The little dog had no doubt got the wind of the meat, and so brought on itself the wrath of the rightful owner, which was either oblivious to, or, suddenly awakened from sleep, unaware of, our presence.

Leopards, when hungry, sometimes prowl about their area until they sight or wind an animal, and then stalk it, after the manner of lions and other cats, or they lie in wait near game tracks and drinking places, now concealed in some dense thicket or clump of reeds, now extended along the overhanging branch of a tree, from which they drop upon their victim as it passes beneath. The death wound is inflicted by a bite which severs the jugular vein or the vertebræ at the back of the neck. The blood is licked up until it ceases to flow, and the carcase dragged to some convenient tangle of brake, or beneath some bush, where it is neatly disembowelled. The entrails are put aside, and covered with earth or leaves. The heart, lungs, and liver are first eaten, then the nose, tongue, and sometimes the ears, after which tit-bits real operations commence upon the brisket. Skin and flesh are swallowed together, after the manner of lions, and bones, except the ends of the ribs, and other gristly extremities are avoided. Having eaten as much as he can, the leopard, towards morning, proceeds to the water to drink, but, before doing so, often takes the remains up a tree for safety, a necessary precaution where hungry jackals and hyænas are ever on the watch for the leavings of their betters.

Not only are leopards expert climbers, but they are able to drag comparatively heavy animals to the most surprising heights. I have seen a full grown impala ram, which, though gralloched, weighed as much as the leopard itself, stuck in a fork fully twenty feet from the ground. How such a feat is accomplished has always been a mystery to me; but few days need be spent in the bush without coming across evidence of its successful performance. A hunter, whose experience in the eastern Transvaal was in past days second to none, and whose testimony is unimpeachable, relates having once seen a giraffe calf which could not have weighed much less than 200 pounds, lying across a branch about twelve feet from the ground, and many other instances of the strength of these cats are well authenticated.

Though leopards will thus attack the young of even the giraffe, as is further recorded by Mr. Selous in his "African Nature Notes," and though the immature of practically all the larger antelopes occasionally fall victims, their prey consists, generally speaking, of animals not larger than a reedbuck. On a few occasions I have

known full-grown kudu and waterbuck cows to be killed, and Colonel Roosevelt speaks of the death of a Grèvy zebra ; but the larger horned ruminants are generally left alone. Once my grey stallion "Pompey" came in from grazing with slight claw marks on his quarters, which, from their position and size, had undoubtedly been inflicted by a leopard. If the latter mistook "Pompey," who happened to be shod behind at the time, for some hornless individual of the antelope tribe, he was probably roughly disillusioned.

Although these cats certainly kill a large number of the smaller ungulates, such as reedbuck, impalas, bushbuck, duikers and so on, their food consists by no means entirely of members of the *bovidæ*. In fact the leopard is liberal in his ideas as to diet, and devours impartially almost any warm-blooded creature which he can overcome, be it mammal or bird. Baboons and monkeys, cane rats (*thryonomys*) and other rodents, large and small, and of all sorts, are eaten, as well as guinea-fowl, francolins, and in fact any feathered creature which can be captured at night upon its roosts, not even the larger *accipitres* escaping. A leopard which clings closely throughout the year to some bush near the ranger's station on the Ngwanitzi River, and whose habits were carefully observed by the officer for several months, seems to have subsisted, during that time, entirely upon small birds and mammals; at any rate no trace of anything larger than a cane rat having been killed was ever noticed. Leopards with porcupine quills sticking in their feet and bodies are occasionally brought to bag, but never, in our experience, present the pitiable spectacle of emaciation so frequently noticed in lions in similar case. Perhaps their method of hunting, consisting as it does so largely of lying quietly in wait for their prey, handicaps them less when thus temporarily crippled. Something, too, they may owe to their great natural cunning and activity, which enables them to elude the sharp spines, which form the porcupine's sole, but far from contemptible, method of defence. It is said that they hesitate to attack full-grown male warthogs and bush pigs, though they prey freely upon females and immature animals. As I have known large boars of both species put up a good fight even against lions, and a lioness actually killed by one of the former, this is quite likely to be the case. A solitary wild dog will be pounced on and devoured, but should a band of these bush pirates be encountered, the leopard will lose no time in seeking safety. No kinship with the *viverridæ* is recognised, and remains of genet cats are not infrequently found, which obviously had formed meals for leopards. In such cases the fur had been scratched

A Female Leopard.

out and not eaten, as the hair of a buck would be. Leopards as a rule prefer to kill their own meat, having a great partiality for warm blood; but, when pressed by hunger, have no objection to almost any kind of carrion, and often are taken in traps set for hyænas. Once, indeed, a female leopard met her fate when the bait *faut de mieux*, was actually the flesh of one of these rather unsavoury animals. They will return again and again to their own kill, regardless of its putrescence, until it is finished; but cannot be depended upon to do so on consecutive nights. Indeed, if the least suspicious of danger, it is possible that a leopard may allow several days to elapse ere he comes back, though eventually I think he may be relied upon to revisit the spot, unless he happens accidentally to have met with and killed some new prey in the interim. I once came on a kill about three days old and half consumed, but three more full nights had passed before the animal again came near it. Like lions, leopards can go for a considerable time without food, and, to an even greater extent, believe in "making hay while the sun shines." Especially is this true of a leopardess with cubs. In such a case the toll exacted from a herd of impala, for example, will be measured only by the agility of the members in effecting their escape. Instances of a couple of impalas or reedbucks, killed apparently during the same onslaught, by a single leopard are numerous; and, should one of these savage little brutes succeed in entering a goat or sheep pen, it will not rest content until every one of the inmates has been disposed of. Since usually it takes the better part of a week for a leopard to consume entirely a full-grown impala or reedbuck ram, pure lust of slaughter must be held responsible where several animals are simultaneously destroyed, except, indeed,where a leopardess has one or more-well grown cubs to provide for. African leopards are no less partial to dogs as articles of diet than are their congeners in India. Some years ago five curs, taken from native poachers, were at Ranger Wolhuter's camp by the Olifants River. At dusk they were fastened up for security to a log near the native fire. The night proved dark and drizzly, and a leopard, stealing silently into the camp, took three of them away, having, as was evident from the tracks, returned for them one by one. It was followed up and shot by the ranger, with the aid of his own dogs, on the following morning, and proved to be an old animal which for some time past had been in the habit of purloining the fowls from an adjacent kraal, climbing the trees at night and snatching them from the branches in which they were roosting. I have

never heard of an authenticated case of a man-eating leopard in south Africa, though stories are sometimes related by old natives of children having been taken in past days. The reason may lie in the fact that the natives would never permit any animal to survive a first offence of this nature.

Savage and formidable as the leopard undoubtedly is, he will not face large and courageous dogs by daylight if he can avoid it, and I recollect a couple of such animals, belonging to one of the rangers, pinning and holding a leopard until their master came up to despatch it. Mr. Sanderson, who sometimes hunts leopards with his large pack of dogs, often finds very little left by the time he arrives on the scene. A leopard, in fact, acts very much like an ordinary domestic cat in face of dogs. Driven to bay in some corner, he can and will defy them, but should a way of apparent escape lie open he will take to flight, and, if caught before reaching a tree or thick covert, the advantage lies rather with his enemies, provided they know their business and are sufficiently powerful and determined. The Franciscan Fathers at the Baromo Monastery above Tete, on the Zambezi, used to own a very large and active cross-bred deerhound, which, they said, had accounted, by itself, for more than one leopard; but, generally speaking, the latter, with its four sets of sharp talons, holds an immense advantage over any single dog, and, even if overweighted and borne down, can rip its enemy's belly with its hind ones. A big dog's only chance is to pin the leopard by the back of the neck while still on the run, when he may succeed in crippling it before it can use its claws. Probably no dog, whatever its size, and no matter how courageous, stands a chance if taken unawares by a leopard.

When at bay the leopard is a most plucky and dangerous animal; unlike a lion, he may be relied upon always to charge home; the possibility of his losing heart and stopping or swerving at the last moment is so slight as to be not worth reckoning upon. A large number of them have been trapped during the last eight years in the Transvaal Game Reserve, and I can hardly recall any instance in which, when followed up in the morning, the animal has not charged or attempted to do so. In order to lessen the chance of the captive releasing himself, the procedure has been to attach the iron trap firmly to a branch, which, while too light to afford purchase, is of sufficient size to leave a track easy to follow. Although the leopard, thus encumbered, can charge at no great speed, there exists the possibility that his sudden furious spring on first sighting his

pursuer, may release his paw, if, for instance, he has been caught by one toe only; and this element of danger supplies an excitement to the work which would otherwise be lacking. I use the word "work" advisedly, for in a reserve all predatory animals being, beyond a certain limit, inimical to the objects in view, have to be treated as poachers, and, while conforming to the canons of sport so far as possible, we have not to lose sight of that fact. Therefore, while, against the lion, it is impossible to contemplate the use of any weapon other than the rifle, had we to depend upon fair shooting alone to keep down the increase of so stealthy and elusive a member of the cat tribe as the leopard, failure would certainly attend our efforts. A large one which had killed a donkey foal close to Sabi Bridge, was caught in a trap set at the kill, and two of the rangers went out next morning to despatch it. It had taken the trap over a bank, or small ridge, on the other side of which lay a patch of reeds. Thinking it had gone into the latter for concealment, one of the men walked, rather casually, up the bank, and almost fell over the leopard, which was lying just on the other side. The moment the man appeared the animal, which had been listening intently to its enemy's approach, made a rush, and all but reached him. Indeed, had he not leaped backwards with an agility as surprising to himself as it was to the onlookers, he would assuredly have been caught. The beast continued to come on at an astonishing rate, considering the handicap of trap and attached branch, and was stopped only with some difficulty. On another occasion a trap had been set for hyænas near a river, and the ranger, coming along in the morning, found it had been dragged into some drift and tangle close to the bank. The soft sand showed so broad a spoor that he jumped to the conclusion that a crocodile, ashore during the night, had taken the trap into the river, and, hoping to discover some trace of Government property, he got on his hands and knees and crawled along the long dark hippo tunnel down which the track led. After a time he came on the end of the chain, and, thinking that the crocodile had got free, caught hold of it in order to drag out the trap. The moment he touched the chain, a terrific growl came out of the darkness close ahead of him, and he heard the clanking of the iron. The time which he took to get out of that tunnel was remarkably short; but, if the branch to which the trap was fastened had not caught in the drift-wood, he would scarcely have been quick enough; as it was, the leopard emerged from the passage only a fraction of a second after the man, and it was doubtless a sufficiently narrow escape for the latter.

For its size it is probable that a wounded leopard is a more dangerous beast than even a lion in a similar case. Not only is he, as a rule, pluckier, but he is less ready to leave a prostrate enemy than is his larger cousin, and will go on biting and tearing until killed or driven off. In addition, he is far more agile, and, owing to his small size, presents a more difficult mark for the rifle when charging. Wolhuter, who shot one almost at his feet, said that the two points which specially remained fixed in his memory were the pace the beast came at and its insignificance as a target. A sportsman who recently was badly injured by a leopard in east Africa, remarked that his sensation was as though a glorified tennis ball was coming at him, and, so rapid was the onslaught, that he had not even time to pull the trigger before the beast was on him. Years ago in the eastern Transvaal, a party of hunters had driven a wounded leopard into some reeds, and, while the others took their stations at various likely points, one of them mounted a large rock a few yards away, directly facing the creature's hiding place. Suddenly the leopard charged out. The sportsman fired, but failed to stop it, and at one bound it sprang on to the rock and hurled him from it, falling on top of him and mauling him to death before assistance could arrive.

Leopards sometimes show very great sagacity, not only in avoiding traps set for them, but in abstracting the bait without getting caught. A leopardess with two cubs, on two successive nights, sprung a trap and took away the meat without injury to herself. On the third, a gun having in the meantime been set in addition, she pulled away the thick thorn fence built at the back of the kill, and dragged the latter away in safety. The touch of these animals is so delicate that the least rustiness of the springs of the gin spells failure, and they will avoid all obviously artificial roads to the trap, and often choose the most forbidding fence of thorns through which to wriggle to the meat. A wounded leopard at bay appears the very incarnation of ferocity, his ears are laid back low against his flat-looking head, his long white teeth gleam between the withdrawn, snarling lips, while his eyes, fixed with steady and sinister stare upon his enemy and filled with dull greenish-red light, glare murderous hate. Even when you know his back to be broken, his appearance is so little assuring that you have qualms about approaching close for the administration of the *coup de grâce*.

Occasional instances of apparently unprovoked attacks occur. Some years ago one of the native policemen on patrol was at a

village in the early morning. A leopard had been marked into a thicket close by, and some of the women seem to have thrown doubts on the constable having the courage to go in with his assagais and drive him out. At all events, the man (a Swazi) entered, and almost immediately was attacked by the leopard, which he only succeeded in beating off after he had received several nasty wounds. This animal is said to have been a male.

Leopards are good swimmers, and have no objection to crossing water. During the winter months the drift-tangled islands in the middle of the Sabi are very favourite day resorts, especially for females with cubs. Sometimes quite a deep and relatively wide channel has to be crossed to attain these refuges, and, where the water is shallow and the current slight, I have known dead impalas dragged through to the islands. The prey is always hauled along by the neck, much after the custom usual with lions, and is seldom eaten exactly on the spot where it has been killed, but is dragged away to some favourite lair, which may be a hundred or more yards distant.

The period of gestation is about three months, and the cubs appear generally to be born during the south African winter and spring; but I am of the opinion that no very definite rule can be laid down in the matter. Thus I have seen cubs, apparently about four months old, at the end of October, while in August a leopardess was killed which had two young ones, nearly ready to be born, inside her. Again, in October, a female proved to contain two cubs which would not have seen the light for nearly a month. I think two or three are generally born in one litter, though, so far as our experience in the Game Reserve has gone, two has been the more usual number. The secretive habits of these cats prevent their life history being studied in the manner possible with lions, but there is no doubt that, in a wild state, it is exceptional for more than one of each litter to arrive at maturity, and also that a leopardess spends as much time and patience in the instruction of her offspring as a lioness does. It is therefore reasonably certain that comparatively long periods elapse between the birth of each litter. Pairs of leopards have been taken at the same bait, which were undoubtedly mother and daughter, or mother and son, though the younger animals had often very nearly attained to the size of their parents, and must have been in some cases quite eighteen months old. I have seldom known a leopardess accompanied by more than one well-grown cub, though two are usually seen in the weaning stage.

Leopards are unsociable and solitary by nature; a male and female

remain constantly in company only during the mating time, and at other periods of the year lead solitary lives, except that females are generally accompanied by the surviving member or members of the last litter, which remain with her certainly until she considers it time to seek a new mate, possibly until her next family is born, by which time the former one is well qualified to seek its own living.

On the whole they are silent creatures. Their ordinary cry is a sort of harsh cough, repeated several times in quick succession, and not unlike the sound made in sawing wood. When disturbed, or in the act of charging, they utter loud, harsh grunts, single or repeated, much resembling those made by a lion, though of lesser volume.

I have weighed a good number of low country leopards immediately after death, and have found that the average weight of a full-grown male, in fair condition, does not much exceed 100 pounds, although there have been animals which have turned the scale at 120 pounds. Females average from twenty pounds to thirty pounds less, and one full-grown member of the latter sex, in very poor condition, barely drew fifty-three pounds. I have never weighed any hill leopards, but I should imagine that they would be a good deal heavier, judging from their appearance and measurements.

Like other cats, they are more easily disabled than any of the herbivora, and their recuperative power, though considerable, is also less. A leopardess shot on the Sabi had an old bullet wound in the shoulder; the skin had healed over it, but underneath the hole was full of pus, and the animal in very low condition. She had been wounded by Ranger Healy about five months previously.

Sitting up for a leopard over his kill at night is usually disappointing work. Unlike a lion, he never walks boldly up to the spot, but, on the contrary, creeps round in the shadows, closely scrutinising the ground and investigating the branches of the trees, so that it is very difficult for the sportsman to escape detection, and on the least suspicion of danger the animal will vanish as silently as it came.

The feline attributes are exceptionally well marked in the leopard. His every movement is stealthy and sinuous. He will seldom cross a piece of open ground if, by making a detour, he can get to the other side under cover of bushes or grass. When the moment for action arrives the latent strength concealed under the sleek velvet-like exterior shows itself, and the lithe body, now rigid as a bar of iron, is launched forward upon the unsuspicious victim almost with the rapidity and accuracy of a well-directed rifle bullet.

When caught young these animals often become very tame, showing much the same degree of affection, if affection it can be called, as is evinced by domestic cats; but the feral nature is apt to show itself as the beast increases in age and size, and it is then best disposed of to the nearest zoological gardens or menagerie.

The Serval (*felis serval*).—This very handsome cat ranges throughout the whole continent of Africa wherever the situation is suitable to its habits.

It is a long-legged, light-bodied creature, having a relatively short tail, a small head, and large ears. In height it stands about twenty inches at the shoulder; its length being nearly twice as much, exclusive of the tail which measures about twelve inches. It is handsomely marked with dark spots on a tawny groundwork; at the neck and shoulders these spots become elongated into stripes, while the fur underneath the body is longer than that on the upper parts, and nearly white in colour. Cases of melanism are much more frequent than amongst leopards.

The serval preferably frequents the vicinity of ravines, dongas and vleis, covered with bush of not too dense a character, long grass, or reeds.

It is an expert climber and when pursued by dogs usually takes refuge in a tree. It is essentially nocturnal in habit, and by day often lies concealed under bushes, or amidst long grass and reeds, at no great distance from water.

Its foods consists of rodents from the size of large rats downwards, guinea-fowls, francolins, and other smaller birds, and occasionally the young of lesser antelopes, such as duikers and steenbucks. It is a light animal for its height, and, though old males occasionally put up a good fight, can usually be tackled by any resolute dog even of small size. In fact, I have known medium-sized servals held, and once or twice killed, single-handed by a plucky fox terrier.

The cry of the serval is a shrill "Mwa, mwa," repeated seven or eight times in rapid succession, when at bay it spits and growls much like an ordinary domestic cat.

Several kittens appear to be born towards the end of the southern winter. Three young ones, apparently about six weeks old, were found in an old ant-bear hole early in September, and young animals of an age to accompany their mother have been captured in July, August and October. Three appears to be the usual number at a birth. Servals do not lend themselves easily to domestication, and, no matter how young they may be taken, seldom overcome their

repugnance to human beings, though they thrive well enough in captivity.

A small spotted variety which has been named *f. servalina* inhabits west Africa.

The African Tiger Cat (*felis celidogaster*).—This spotted species which is similar in general shape, but superior in size to the ordinary domestic cat, is an inhabitant of the equatorial forest zone.

The Black-footed Wild Cat (*felis nigripes*).—General colour pale tawny, nearly white underneath and on the inside of the limbs; body covered with small rounded dark spots, which, on the nape and shoulders fuse into vague longitudinal stripes; ears of moderate length, slightly pointed; legs encircled each by three dark rings. Soles of feet black. Tail relatively short, and black tipped.

This cat, which is rather less in size than the domestic animal, is local in distribution, in fact appears to be confined to the Kalahari Desert, Bechuanaland, and the west of the Orange Free State.

The African Wild Cat (*felis ocreata*).—This cat, of which the south African variety is known as the Kaffir cat (*felis ocreata cafra*), is distributed over the whole of Africa except the equatorial forest zone and the Sahara. During Pleistocene times, and, indeed, probably until much more recently, its range included a large portion of Europe, and it is possible that the modern domestic cat originally was wholly or partly derived from the north-eastern form of the species. It is, at least, certain that the animal was domesticated and held sacred by the ancient Egyptians, as carcases have been found in great numbers embalmed in the tombs of these people.

In colour the species is brownish grey, with slight transverse dark stripes on the body. The upper parts of the limbs and the tail are dark ringed, the tip of the latter and the lower portions of the former being usually more or less black. The head is dark with darker irregular markings; there is a black spot in front of each eye, and the under parts are yellowish buff, spotted towards the front. Ears, rufous behind. The tail is rather less than half the length of the body. In size the animal is rather larger than a large domestic cat. The female is altogether lighter in colour and is less distinctly marked.

The Kaffir cat is nocturnal in habits, but is occasionally met with in the day-time, when the weather is cloudy and cool. It inhabits for preference lightly forested country, lying up in bushes or in deserted ant-bear holes during the day. Its food consists of birds

and small mammals, and it is extremely destructive to game birds, as well as being a notorious raider of fowl roosts. Its breeding habits are apparently not very dissimiliar from that of the domestic cat, with which it interbreeds freely. A female cat at Sabi Bridge had a litter of four kittens by one of these animals, and the male of the progeny was for five years in my possession at that place. In size he was slightly bigger than an ordinary domestic "tom"; in colour he was bluish grey with the typical wild cat markings. Although perfectly docile and gentle, he never quite lost some of the wild characteristics of his sire; disliked being handled, and slept during most of the day. The majority of his descendants of the first generation were either marked like their father, or were jet black in colour, no matter what the markings of the mother; and all showed the same curious aversion to handling, even as small kittens. He himself was apparently by no means indifferent to the attractions of the female wild cats inhabiting the neighbouring bush, and often came home bearing the marks of contacts with rival males. However, he had so far imbibed civilised principles that he never interfered with fowls, and was always on excellent terms with the numerous dogs of the station. He was very quick with snakes, and I have often seen him consuming the remains of a night adder and such smaller species in the early morning. Retribution eventually befell him, however, in the jaws of a large python.

On moonlight nights, or at dusk, these wild cats may often be seen hanging about in the near vicinity of human dwellings, and, while staying at Gondokoro, I put up one just after sunrise, in the compound behind the dâk bungalow and well within the outskirts of the village.

The Jungle Cat (*felis chaus*).—The jungle cat ranges from north-east Africa into Asia. It is about the size of the preceding species, and is of a uniform fawny colour with a very short tail.

The backs of the ears are rufous, and the limbs and tail have dusky bands, the latter with a black tip.

The Caracal (*felis caracal*).—The caracal is much the most powerful of the smaller cats of Africa, and, in its long limbs, pencilled ears, and dentition, has marked affinities with the true lynxes of the northern hemisphere. In colour it is uniformly grizzled yellowish red, lighter below. The ears are pointed and bear at their ends long pencilled tufts of black hairs. There are traces of rufous spotting on the underparts, strongly in evidence in quite young animals, but tending to become obsolete with age. The height at the shoulder

is about eighteen inches, and length of body about two and a half feet, tail about ten inches, but the caracal is a heavily built animal for its size; the limbs are massive and powerful, and it far exceeds in strength and capacity for destruction the taller and longer, but more lightly built, serval.

Its range comprises the whole continent of Africa wherever the environment is suitable.

The caracal may be encountered equally in fairly open, mountainous, or densely-bushed flat country. In the day-time, like other cats, it prefers to lie up in thick cover, but I have seen individuals asleep under a tree almost in the open. I noticed one standing in slight shade at 8 a.m. on a hot morning in summer, and at first mistook it for a steenbuck. Its food consists of birds of all kinds, even of the larger predatory species, which it attacks on their roosts at night. I have seen remains of the large and powerful tawny eagle undoubtedly killed by a caracal, and on one occasion came across those of a martial hawk eagle, largest and fiercest of all birds of prey in the eastern Transvaal, which apparently had met a like fate, though it must be admitted that there was some little doubt whether in this case a leopard had not been the aggressor. Besides birds, the caracal preys on all the small mammals and lesser antelopes, such as duikers and steenbucks, and the young of creatures of the size of impalas and reedbucks, together with sheep and goats when they offer themselves. When shooting on the hills near White River, a very large male caracal was killed which proved to contain the greater part of a steenbuck. The incident occurred in a piece of thick bush, and I distinctly recollect Mr. Munnik, unable to see clearly through the covert, calling out that he had shot a lion cub, and our momentary anxiety—we were armed only with shot guns—lest the infuriated mother should suddenly appear upon the scene!

A dog must be both large and courageous to successfully cope single-handed with one of these powerful little cats, and my Irish and fox terriers have often returned severely worsted from the fray. If pursued by dogs however, they will usually take to trees, being expert climbers, and can then be easily shot. When at bay, they spit and growl after the fashion of most of the lesser *felidæ*, but normally their cry is not unlike that of the leopard, though pitched in a lower key.

Caracals are generally believed to be untamable, and, in fact, out of a good many young animals which I have kept in captivity at Sabi Bridge at various times, I never knew one which showed the

least disposition to be reconciled to human beings; but I met with an exception in Portuguese territory, where the wife of the Commandant of the Station at Muncha owned a nearly full-grown beast which lay in her lap and was in all respects perfectly amenable and docile with its mistress, and with some persons whom it knew, though it showed considerable antipathy to strange white men and to all natives.

Two or three is the usual number born in one litter, and a disused ant-bear hole, or a hole in a tree, is often employed as a nursery. Judging by the time at which young caracals have been usually captured, I think the late winter—July and August—is the usual time for the kittens to be born in the eastern Transvaal, but, as with most other wild animals, births occur over a period of several months before and after the most favoured season.

The Hunting Leopard or Chita (*cynœlurus jubatus*).—This animal is distinguished from all other cats by its lack of fully retractile claws, a circumstance which imposes upon it a manner of hunting its prey distinct from that employed by the remainder of the *felidæ*. It is a slenderly-built, long-limbed animal, less sinuously graceful than the leopard, and fashioned for speed rather than for cat-like agility. The tail is long and rather bushy, the spots are solid, and an incipient mane or ruff decorates the neck. The head is small, the teeth are inferior in size to the leopard's, and the jaw less powerful.

It inhabits most of the drier, less densely-forested portions of the African continent, where game exists, and, like that of the lion and the caracal, its range extends into Asia; or perhaps it would be more correct to say that the species has extended, without pronounced change of type, from that continent into the Ethiopian region.

The hunting leopard is generally found in open or lightly-forested grass country. Thick bush, being detrimental to its method of securing its prey, is avoided.

It is extremely secretive and shy by nature, and, although, perhaps, comparatively numerous within a given area, it is surprising how seldom it is met with, considering that much of its hunting is done in the early morning and late evening. It is less nocturnal in habit than any of the other cats, and often ventures abroad in the day-time, especially in cool and cloudy weather. In a game country there is always the odd chance of coming across one of these animals, often under the most unlikely conditions.

I was once in camp on the Sabi, and had just finished lunch on a particularly hot January day when a chita came walking quietly out

of the bush within thirty yards on his way down to drink at the river. Of course he saw us as soon as we noticed him, and had disappeared long before the rifle could be snatched up. Another time I had sent the waggon on ahead before sunrise, and, after a light breakfast, was cantering on to overtake it; I could already see the unwieldy vehicle crawling along some 400 yards ahead, to the usual accompaniment of strident yells and whip cracking, and naturally an encounter with a predatory beast was the last thing in my mind. Suddenly something in the bush near the path caught my eye, and I became conscious of a large chita slowly making his way along in the opposite direction to myself, quite unconscious of my presence, and less than fifty yards distant. I think on both these occasions a recent heavy meal had induced a temporary want of vigilance, and possibly the same factor may have been accountable for the almost ridiculous ease with which they have sometimes been galloped down on horseback.

For a short distance this cat can certainly outstrip any living antelope, but its bolt is probably quickly shot, and I think if the game succeeds in getting sufficient start to keep ahead for the first quarter mile or so the chita seldom perseveres.

Chitas generally hunt in pairs, but family parties, consisting of the male, female, and one or two well-grown cubs, are not infrequently noticed. They are far more sociable creatures than leopards, but more strictly monogamous than lions. The prey is stalked by moonlight, or in the early morning and late evening—though in cloudy weather any time of the day serves. In this preliminary work the chita displays all the stealth and cunning of his cousin the leopard, taking advantage not only of the wind, but of every sheltering bush and tuft of grass, as he crawls along glued flat to the ground. Arrived within convenient distance, he makes his rush like a bolt of lightning, and has already covered probably half the intervening distance ere the unhappy victim has so much as raised his head. The prey is most likely pulled down before it has got into its stride; but, even should it get a fair start, for the first few hundred yards its pursuer can move at nearly double its pace, and its chance is a slender one.

Racing up alongside its quarry, the chita springs with unerring aim at the throat, or on to the back, when its weight and the pace at which both are moving bring pursuer and pursued headlong to the ground. The grip of the teeth is never relaxed; the claws, though they cannot be fixed firmly into the flesh as the leopard's are, nevertheless afford the chita a purchase, and the prey, bitten through the

jugular, or with compressed windpipe, quickly surrenders its life. The belly of the victim is first torn open, and the entrails and paunch roughly and clumsily pulled out, in a manner very different from the clean adroitness displayed by lions and leopards. The intestines are afterwards dragged to one side, but are not buried or covered over. The liver, kidneys and heart are often left in their places. The chita first eats the two latter, and next turns his attention to the head and neck, consuming the cartilage of the nose and ears, and sometimes tearing out the tongue; he next eats the meat off the face and neck, proceeding thence to the soft ends of the ribs and the hind-quarters. The liver and the fore-quarters are generally left to the last. A chita kill is always recognisable by the slipshod dirty way in which the carcase has been butchered; the prey is generally eaten where killed, and not dragged away to shelter.

They are not so regular in returning to their kills as other cats. I think they will often come back once, but cannot be depended upon to do so, especially if they have been alarmed. Their usual practice seems to be to eat as much as they can, and then to go and drink at the nearest water. After this it is quite a matter of chance whether they return to lie up near the kill or not; if they do, they probably eat some of it the next night, but I never knew them come back to it after the second night; no matter how much meat was remaining. They are, therefore, very destructive animals, much more so than the leopard, and, relatively to their size and power, than the lion. A large male chita was shot by a trap gun set over his own kill —a young waterbuck—at Sabi Bridge. He had killed early in the morning, and had eaten a good deal of the meat. He returned, and was shot about nine p.m. the same night. One afternoon about four o'clock we disturbed three of them lying up by the carcase of a reedbuck ewe which had been killed the same morning, but had not been touched. That night they returned and ate the whole of the hind-quarters, about one half of the trunk, and one fore-quarter, together with the meat of the head and neck. Two traps had been set, over which the animals had leaped to get at the meat; they released the springs, without damage to themselves, no doubt in the course of hauling out the carcase from the little fence which had been built round it. They never came back again, and hyænas finished the meat.

For the most part they prey upon antelopes up to the size of a reedbuck and the immature of larger kinds (occasionally on the hornless females and even the males of certain species, such as

waterbuck and kudu). A fine waterbuck bull was found lying dead in the bush, life having been extinct, apparently, for about twenty-four hours. None of the meat was eaten, but the back tendons were almost bitten through; there were scratches and tooth-marks all over the limbs and body, and the animal had bled to death from the severing of the femoral artery. Following the back tracks, we came to where they showed that a single chita had rushed on the buck as he was quietly walking along, pulled him down and rolled over with him on the ground. The big buck had then scrambled up and dashed madly off, the chita probably clinging to his back. A little further on they had fallen again, and then, rising a second time, the buck had dashed under the low-growing branches of a large tree, by this means apparently sweeping his assailant from his back and possibly injuring it, as it seemed to have made no further effort to pursue, and the waterbuck dropped a couple of hundred yards further on from loss of blood. A pair of chitas pulled down and killed a full-grown tsessebe bull near Tshokwana in April, 1909, but I think both this and that of the bull waterbuck were exceptional cases, and I never heard of a full-grown individual of the more formidable species, sable, roan, wildebeest, or zebra, being interfered with. I do not think chitas care much for carrion, at all events I never heard of their eating it, and, from the manner in which they neglect their own kills, it is probable that they prefer not only to hunt their meat, but to eat it fairly fresh.

Several cases of cannibalism have been known. In 1903, a native watcher, patrolling in the Game Reserve, came, one evening, on two chitas fighting in a clearing of the bush near the Crocodile River. He was frightened and ran back to his picquet, but in the morning, consequent on his report, the white ranger went out and found a male chita lying dead on the spot. A reedbuck ram lay close by untouched; but the dead chita had a portion of its neck and shoulder eaten away. His revenge satisfied, the conqueror may have felt too sick to fall to on his legitimate prey. Major Fraser reported a similar case as having occurred in the Singwitsi section of the game reserve in 1908, when a large male was killed and partially devoured by another. Perhaps in such cases as the above, where two males have contended over a "kill" or for the possession of a female, the agitation of the struggle, combined with the taste of blood, have led the victor, while still under the influence of excitement, more or less unconsciously to follow his life-long instinct of devouring what he has killed. Normally, to all predatory beasts, the flesh of one of their own kind is the forbidden thing.

Chita Cubs.

A Pair of Leopards.

Though a ruthless hunter of his natural prey, the chita is perfectly inoffensive as regards man, and, when wounded, shows an entire lack of pugnacious qualities, presenting in this respect a most remarkable contrast to his relative, the leopard. Apart from the seeking of his daily bread, he is gentle and timid in disposition, and is docile in captivity.

Owing to the formation of his claws, the full-grown chita is unfitted for tree climbing, though he sometimes springs into low-hanging branches, or up a sloping trunk when closely pursued by dogs and unable, through injury or other cause, to outdistance them. I believe that young animals, before their claws have become worn or blunted, can climb fairly well, and I once kept two small cubs at Sabi Bridge which ran up the walls of the large wire netting cage in which they were confined with the facility of ordinary cats, and could even cling on to the roof. I also noticed that the semi-retractile claws of these cubs were quite as sharp as those of a true feline, and when one of them rushed at a terrier which had got into the cage he struck at the dog with his forepaws as he charged, just as a domestic cat often does. These young animals were caught near the Mlondozi Spruit in October, 1908, being then apparently about two weeks old; the mother was started out of some rocks by a couple of native policemen, and made off without attempting to defend the little ones, which attempted to follow her, but were quickly caught and picked up. They were covered on their upper part with long blue-grey silky hair, while the sides, tail, belly and legs of each were coated with tawny fur, thickly pitted with dark solid spots. The eyes were dark brown, and the whites showed a good deal. The sound which they usually uttered was a bird-like chirp, sometimes followed by a purring noise. When annoyed they spat exactly like domestic cats. At about two months old they had become very tame; but when I had them out for exercise in the yard one day something startled them, and they could then run so fast that they were recaptured with some difficulty. At three months old the pronounced greyness of the backs had begun to disappear, and the spotting had become general all over the bodies; the fur throughout was, however, much longer than in adult animals. The voices also altered, the bird-like chirps becoming changed into "mews" not unlike those uttered by domestic cats, which were curiously mixed with, and followed by, the short purring sound. About this time they began to take a strong and apparently not too benevolent interest in any small dogs and fowls which passed near

their cage. Besides milk, the little creatures took flesh freely soon after their arrival, and later accepted anything in the way of raw meat offered them, consuming not only the flesh of antelopes and birds, but of leopards, civets, hyænas, and wild dogs with complete impartiality. They were always very shy with strangers, but their own attendant could handle them readily.

Cubs seem to be born in the eastern Transvaal during the last half of the year, and come into the world blind. Besides those alluded to above, a pair about three months old were seen towards the end of February, and very young animals have been reported in August and September. From two to four seems to be the number of young produced in one litter.

The call of the adult animal is a kind of "mewing," the sort of sound that might be expected from a domestic cat did it attain the same size. When alarmed or annoyed it utters a deep growl.

CHAPTER XIV

VIVERRIDÆ, PROTELIDÆ, AND HYÆNIDÆ

The African Civet—Genets—Mungooses—The Aardwolf.

VIVERRIDÆ

THE African Civet (*viverra civetta*).—This genus contains only one African species, the well-known civet cat, of which a full-grown male will measure some four feet in length, eighteen inches of this being taken up by the tail. The ground colour is yellowish grey; there is usually a ridge of long black hairs forming a crest down the middle of the back. The body is covered with dark spots. The cheeks, throat, and limbs are black. Tail ringed with a black extremity. The ears are short, broad, and rounded with white bases and black extremities. Glands are present on each side of the tail, and the scent obtained therefrom was formerly in considerable demand as an article of commerce.

The species extends through the tropical and sub-tropical regions of Africa, including the low-lying regions of the east coast as far south as Zululand. It favours rather thick bush, and, as a rule, is not met with in hilly country.

The civet is solitary and nocturnal in habit, and lies up by day in grass, bush, or the holes made by ant-bears and other large burrowing animals. It is strictly terrestrial, being from the nature of its claws unable to climb trees.

Its diet is a mixed one. At certain seasons its favourite food, as indicated by examination of droppings and of the contents of the stomachs of many individuals killed in the game reserves of the Transvaal, consists of a round red berry, containing a large stone, the product of the tree scientifically known as *zizyphus mucronata*, and called by the natives *mpafa*. This tree possesses a hooked thorn and an oval leaf, and the fruit is often eaten by the kaffirs in years of famine. White ants, large beetles, locusts, and other insects are also consumed, besides lizards and frogs, while a shelly myriapode (*julus nemorensis*), found in great numbers on the surface of the ground after rain, is eagerly devoured. Among mammals, the

civet preys on rats, mice, and such small creatures as it can catch and overcome. Carrion is eaten freely. Traps baited with any kind of meat, no matter how old, attract civets, and they often come to leopard and other "kills" in the absence of the rightful owners. Did the animal restrict the items of his *cuisine* to the above, there would be no grievance against it; but unfortunately it is a deadly foe to all such bush francolins and other game birds as habitually nest or roost on the ground, kills hares and the newly-born lambs of small buck, is a confirmed egg eater, and occasionally a poultry thief. Therefore it has to be classed among the objectionable vermin, and dealt with as such. I once owned a large cat which, during her wanderings one night, was pounced on and killed by a medium-sized civet. She was found to have been seized by the back of the neck, and the spine was bitten through. The stomach had been torn open, and all the blood sucked from the body. A trap was set, and the assailant, returning to its kill on the following night, paid the penalty of its deed.

Civets are capable of remaining for considerable periods without food. One caught on 1st June, refused everything except water until the 15th of that month, though it was tempted with many of its favourite articles of diet. On the last named date it drank a little milk, and later began to eat normally. It was afterwards found to have sustained an injury to the jaw, probably while being captured. Similar capacity for enduring hunger was recorded of another animal sent to the Transvaal Zoological Gardens, which was some time before it would accept the unaccustomed diet there put before it. When caught uninjured, and offered their usual food, civets generally do well from the first, and often become fairly tame.

They are often chased and killed by dogs, and, as a rule, make rather a poor fight. During the struggle they utter a throaty cough, and when threatened they give vent to a low and rather deep growl. Normally, their cry is a series of low-pitched coughs.

The number of young born in one litter is usually two or three, so far as we have been able to observe in the Reserve, and the nursery is an old ant-bear or other hole in the ground. Owing to the few litters it has been possible to secure on the nests, and the habitual secretiveness of the animal, it is difficult to define the breeding season accurately. Young animals of a few weeks old have been taken in August and October.

GENETS.—The members of the genus *genetta*, which is spread more or less all over Africa, are smaller animals than those of the preceding

one; but possess the same elongated heads and short legs. The bodies are slender and weasel-like in form. The claws have a certain retractile power, especially in the more arboreal species, though in this respect they do not attain to the high specialisation of the *felidæ*.

About thirty African species have been described by naturalists; but the last word on the subject is very far from having been said, and, in fact, the intermediate forms are so numerous, often even in the same district, that classification becomes extremely hard. I recollect going through, with Dr. Gunning of the Transvaal Museum, some hundreds of skins, and a certain number of skulls which had come from Rhodesia, and the characteristics of at least three usually recognised species were so frequently present in the same skin that, in the absence of the complete set of bones and skull for each individual, it was impossible to come to any definite conclusion with regard to its correct status.

In the Transvaal Game Reserve, however, there exist two very well-defined species, distinct both in appearance and habit, which therefore present fewer difficulties to the student.

The Rusty-Spotted Genet (*genetta letabæ*).—The general colour of this species is greyish white. The dorsal stripe and the rather large spots on the body are uniform red, the latter with a dark outer ring. Weight, about five pounds. Total length, about forty inches.

This genet frequents the neighbourhood of permanent water, and, though it climbs trees, is apparently to a large extent terrestrial in habit. It is solitary by nature, and usually has its day lair in holes in the ground, reeds, long grass, and the thick undergrowth of river banks and ravines.

The young, two or three in a litter, are brought forth in burrows made by other creatures. Its prey consists of rats, mice, locusts, beetles, and birds, especially those of the latter which roost on the ground, or in bushes by the waterside.

The skins of rusty-spotted genets used to be in great demand among the natives of south-east Africa for purposes of clothing and adornment, and are still considerably prized. Though widely distributed in the eastern Transvaal, this species is not nearly so numerous as the following one.

The Small-Spotted Genet (*genetta ludia*).—"General colour pale sandy, lighter than cream. Dorsal stripe jet black, and strongly marked, extending from the neck to the base of the tail. Spots tawny, becoming darker on the flanks, small, numerous, and in five or six rows. Head nearly grey, lighter than the body. General

colour of forearm brownish black. Upper surface yellower than the back part, and speckled with small dark spots. Hind limbs below knee black. Tail covered with long coarse hair, and with about ten rings." (Thomas and Schwann.)

This animal is much the most numerous of all the smaller carnivora present in the eastern Transvaal low country. It is arboreal in habit, and, when pursued by dogs, almost invariably takes to a tree, though on the approach of the hunter it generally leaps to the ground and attempts to make off. At such times it sometimes accomplishes bounds of remarkable length. I remember a genet leaping from a height of fifteen feet and landing on the ground twenty-one feet from the base of the tree, a big jump for an animal with a body less than two feet long. Its pace on the ground is not very great, nor does it make a particularly good fight against a dog; any plucky fox terrier, can, in fact, kill one without difficulty.

The small-spotted genet is found in forested country, often at a considerable distance from water. It is solitary and quite nocturnal by habit, spending the day in cavities of trees, or stretched at full length along a branch; sometimes, though less frequently, it is found sleeping in clumps of long grass, or in patches of thick bush. Hollow trunks seem often to be used as permanent quarters by the same individual. In such places also the young are brought forth, the number produced in one litter being usually about three. Newly-born kittens have been taken in September, while three, nearly full grown, were once found in a hollow tree with their mother in March. Any hole or cavity in a rotten trunk in the forest is worth examining for signs of the presence of a genet, and the best way to bolt it is by smoking it out, when it emerges at the last with a grand spring or rush. When angry this genet erects his dorsal crest, and spits, snarls, and growls very much like a domestic cat.

It is strictly carnivorous, preying on small birds, guinea-fowls, francolins, and other winged game, besides squirrels, rats, mice, hares, and such lesser mammals, insects, lizards, and possibly snakes. It is also one of the most dangerous foes of the poultry keeper, being both daring and cunning. Its usual method is to take a single fowl at a time, returning for another as soon as it has finished the first, and so on until it has emptied the roost; but at times a murderous fit appears to seize it, and it will then kill the whole number present, apparently from sheer love of slaughter. In eating a bird, the throat is first seized and the blood sucked; the upper part of the breast is next eaten, and afterwards

the thighs and hinder parts. It is also partial to carrion, will come readily to baited traps, and sometimes is caught in the large gins set at "kills" for hyænas and leopards. This species tames very readily when caught young, and even animals full grown when captured tend to lose their fear of man after a time if they are patiently and kindly treated.

MUNGOOSES.—These are long-tailed animals, with elongated, slender bodies, abbreviated legs and very short wide ears. They are plantigrade, but some species use more of the hind sole in walking than others. The claws are non-retractile, and none of the species are arboreal in habit. In size they vary considerably, from the large grey mungoose, with a body of over two feet in length, down to the little brown mungoose, with his measurement of about nine inches. Their tendencies are carnivorous or insectivorous. Some of the varieties tame readily and are most useful in freeing a house from such pests as rats, snakes, and cockroaches, but are most difficult to keep with dogs, which are apt to regard them in the light of natural prey.

About seven genera and seventeen species are recognised in south Africa; but it is probable that a good deal yet remains to be said, especially in the matter of sub-species. Many types are very local, and in the wilder parts of the country it is seldom that resident Europeans can be induced to take any interest in the smaller mammals which are not included under the magic name of "game." Mungooses are among the deadliest enemies of snakes, which they attack, kill, and devour whenever they can.

The Large Grey Mungoose (*mungos cafer*).—Colour grizzled grey, limbs darker, a black brush at the end of the tail. Length over all about forty-five inches.

This animal is spread throughout the Ethiopian region. It is solitary and nocturnal in habit, and carnivorous in its tendencies, preying on small rodents, game birds, frogs, and reptiles. In the eastern Transvaal it is usually an inhabitant of the less thickly forested, flat bush country, and the foothills of the mountains. It favours equally rocky and level ground.

Measurements of a large one killed in the Game Reserve were:—head and body, twenty-three inches, tail, twenty-three inches, fore-girth, nine inches, hind foot, five inches.

The Slender Mungoose (*mungos cauui*).—This is a small, slightly-built creature, about the size of a stoat. Its colour is grizzled yellowish brown, the tail is almost as long as the head and body, and has a black extremity.

The slender mungoose is distributed throughout the whole of the Ethiopian region. It is found equally in thick bush and in lightly forested country. By day it lies up in holes or in long grass. It is nocturnal and solitary in habit, and of a rather bold and bloodthirsty disposition, having the reputation of attacking hen-roosts, besides preying on small birds, rats, mice, and reptiles. It eats carrion, and will come to traps baited with any kind of meat. There exist several closely allied species which until quite recently were classified merely as local varieties.

The Water Mungoose (*mungos paludinosus*).—As its name implies, this creature prefers the vicinity of permanent water, and has its lair in reeds and grass growing by the banks of swamps and rivers. It takes readily to water.

The White-Tailed Mungoose (*mungos albicauda*).—This is a large mungoose, of a grizzled grey colour, nearly equal to *m. cafer* in size. It is easily distinguishable by its long tail being white throughout its greater distal portion. The white-tailed mungoose has a wide distribution, being met with throughout the larger portion of Africa. In food and habits it much resembles *m. cafer*, but appears to prefer a denser environment.

Among other well-known described species of the genus *mungos* in south Africa are the Ruddy Mungoose (*m. ratlamuchi*), an inhabitant of dry districts, the Small Grey Mungoose (*m. pulverentulus*), and the Pale Mungoose (*m. punctatissimus*).

The Small Brown Mungoose (*helogale brunnula*).—This little animal measures some fourteen inches only in length, of which five or six inches is taken up by the tail. It is grizzled brown in colour, gregarious in habit, prefers an environment of rather thick forest not too far from water, and uses as dwellings old white ant mounds.

Its food consists of white ants, snails, locusts, scorpions, centipedes, myriapodes, earthworms, reptiles, and the eggs of ground birds and of snakes. I have found remains of most of the above in the stomachs of these little creatures at different times. It is believed that they combine to attack snakes even of the most deadly species, both when the latter threaten their young and at other times, and that they can generally kill them with impunity. Their method is to run in and bite the reptile from behind, jumping back swiftly to avoid its fangs, and repeating the operation until they have killed it. The natives assert that when bitten they use some antidote which preserves them from ill effects, but I know of no white man who is able to speak of this matter as being within his own experience.

The small brown mungoose is not strictly nocturnal, and several together may often be seen scampering for their burrows at all hours of the day.

The young, which are born two or three at a time, apparently are not always brought forth in the holes which form the usual dwelling-places of the animals, the mother often constructing a nest in the long grass, which she carefully covers over when she has to leave the little ones temporarily by themselves. Small brown mungooses are easily tamed, and make delightful pets, showing a high grade of intelligence, coupled with an intense and boundless curiosity. In addition to their docile traits, these charming little creatures form a valuable ally to man in his struggle against noxious reptiles and insects.

A closely allied species is Wahlberg's mungoose (*helogale parvula*), the habits of which seem to be very similar to those of the last.

Other small mungooses are Meller's mungoose (*rhynchogale melleri*) and the banded mungoose (*crossarchus fasciatus*), which is often seen tame on the east coast of Africa, and though larger in size is very similar in habits to *helogale brunnula*.

MEERCATS.—This is the term applied to certain genera of mungooses which inhabit the high plateaux of south Africa, where they associate in large colonies. They live in burrows, at the mouths of which they may often be seen sitting on their hindquarters, and gazing inquisitively at passing objects. They are largely diurnal in habit, and live on small rodents and birds, insects and eggs, besides killing and eating snakes. Two young ones are said to be born at a time. Four species are recognised, Selous's meercat (*cynictis selousi*), the pencilled meercat (*cynictis pencillata*), the bushy-tailed meercat (*bdeogale crassicauda*), and the slender-tailed meercat (*suricata suricatta*). The last named species, which is very amusing in its habits, and becomes extremely tame, is often kept as a pet in south Africa.

PROTELIDÆ

The Aardwolf (*proteles cristatus*).—This remarkable animal is in form rather like a hyæna. In general colour it is yellowish grey, with a number of long black and white hairs protruding through the fur. Along the back lies an erectile crest of long hairs. The body is marked with black transverse, and the shoulders with black horizontal stripes. The ears are narrow and pointed, the legs possess indistinct black bands. The tail is short

and bushy with a black tip, and the claws are non-retractile. The length, including the tail, is about three feet, and the shoulder height about twenty inches. The aardwolf is met with throughout the equatorial region in suitable environment. It has not been reported from equatorial west Africa and the forest region. In the eastern Transvaal it is not found in the low veld proper, and occurs only in the more open country among the foothills of the Drakensberg, at a height of over 1,500 feet. As its name implies, it lives in holes in the ground, and it is nocturnal in habit. Two or three young are produced at a birth.

The chief diet of the aardwolf undoubtedly consists of ants, locusts, beetles, and other insects, varied occasionally by carrion, and perhaps eggs. Its dentition is very weak, and its pace slow. Such natural disabilities might well be deemed sufficient to exonerate the creature from the accusations of lamb-killing often levelled against it, especially in view of the fact that competent examination of the contents of the stomachs of dead animals has always indicated a purely insectivorous diet, and that ordinary observers are notoriously inaccurate in matters of this kind. The farmers who formerly used to trek annually to White River in the eastern Transvaal for winter grazing were, nevertheless, firmly of the opinion that they had absolutely traced the deaths of many of their young lambs to the aardwolf. It seems that, having poisoned the bodies of the dead lambs, they found defunct aardwolves lying beside them next morning. Though this evidence was purely circumstantial, it would perhaps be too much to expect the owners of the stock to believe the animal not guilty under the circumstances. Some say that the aardwolf kills lambs for the sake of the milk found in the stomachs. However this may be, it seems probable that, if he is capable of killing such creatures, he may similarly prey on the new born of small antelopes.

Hyænidæ

The hyænas are large, carnivorous, digitrade mammals, furnished with extremely powerful jaws, strong teeth, and non-retractile claws. The number of cheek teeth on each side of the upper jaw is five, and of the lower four, the corresponding numbers in the cat group being three or four, and three, respectively. The skull has a prominent crest of bone along the middle of the back part of its upper surface, to which, in life, are attached the powerful muscles of the jaw. The tail is relatively short, and

the front legs are longer than the hind ones, which gives the animals a very ungainly and clumsy appearance.

The Striped Hyæna (*hyæna striata*).—General colour, dirty grey, marked with narrow transverse dark stripes on body and limbs. A mane of upright hair is present on the neck and along the back. In size this is the smallest of the three species. It is common to Asia and Africa, and in the latter continent ranges along the east coast as far south as German East Africa. Its habits are similar to those of its relatives. The gestation period is three months.

The Brown Hyæna (*hyæna brunnea*).—General colour, ashy brown, with darker bands on the legs and hindquarters. A yellowish white collar is present on the sides of the neck. A mantle of long dark brown hair covers the body, increasing the apparent size of the animal. The tail is short and bushy. Ears large and pointed.

This species, once numerous in south Africa, has now been practically exterminated from the settled districts; but in the north-western portion of Cape Colony, German South-West Africa, parts of Rhodesia, and the northern Transvaal, is still to be met with. It further extends to Angola and German East Africa, and I noticed tracks which seemed to belong to one of the species on the sea shore between Ibo and Port Amelia in Portuguese Nyasaland.

In the north-eastern Transvaal the species is not indigenous to the low bush country, and is everywhere rare. A few specimens have been secured from the kloofs and ravines among the lower hills on the west of the Sabi Reserve, at heights varying from 1,400 to 2,500 feet. The majority of the natives of the low country to whom I showed the skins had never seen nor heard of the animal, and consequently had no name for it; but others, who formerly had lived on the coast north of Delagoa Bay, and along the lower course of the Limpopo River, recognised them at once, and informed me that the brown hyæna used to be not uncommon there.

The strand wolf, as it is called in south Africa, is a solitary animal, nocturnal in habit, and lying up by day in deep ravines and thick bush. When its haunt is near the sea shore it is said to live on dead fish, crabs, and other marine creatures. When met with inland it is an eater of the same description of carrion as the other species, but also often attacks living animals. The first occasion on which one was caught in the Game Reserve, young goats had been persistently taken from a certain kraal situated amongst the hills, and, the rocky ground showing no tracks, it was believed that a leopard was the

marauder. Traps were set, and on the first night a large male of *h. brunnea* was secured at the goat kraal, this being, so far as could be ascertained, the first time such an animal had been heard of in the district. A month later a female was caught in a deep ravine near the same place, and at intervals of a year or two a few others were trapped at lower elevations. The old natives who told me they had known the animals in Gazaland said they often took young goats and sheep, and sometimes even small children, from the kraals at night, besides attacking sleeping adults after the manner of the spotted hyæna.

The Spotted Hyæna (*hyæna crocuta*).—This is the biggest of the three species. Its head and forequarters are very large and massive, but it drops and slopes away behind to such an extent that the two ends of the animal seem out of proportion to each other, and its appearance when moving is most ungainly.

The general colour is ochrey yellow, dotted with large circular dark spots. The head is darker than the body, and is unspotted. There is a ruff of long hairs on the neck, which is sometimes very pronounced in adult males. The ears are short, broad, and rounded; tail short with a small distal tuft. The length of a good male is about seventy inches over all, and the height at the shoulder about two and a half feet. The skins vary a good deal in colour and type, even within the same areas. For instance, a female which was killed on the Sabi River in October was dirty white in colour, while the spots over the whole fore-part of the body were so faint as to be barely distinguishable. On the other hand, in November, two females, apparently mother and daughter, obtained some thirty miles north of the above-mentioned place, possessed skins of reddish grey hue with nearly black spots, the hair on the bodies being rather long. Between these two extremes I have noticed every sort of variation, equally in shade, length of hair, and distinctness of spots. No doubt with age the coat tends to wear away, as immature animals or those in their early prime often carry, in the eastern Transvaal, quite handsome coats, while old male generally look very shabby in this respect.

The spotted hyæna, where not exterminated by the advance of civilisation, exists throughout most of the African continent, and is found even in districts thickly inhabited by natives, where it subsists on the offal and refuse of the villages. Formerly these animals used to swarm round the town of Tete on the Zambezi, and after dark would enter the narrow streets of the native quarter in large

numbers, admirably fulfilling the duties of public scavengers, which otherwise would have been sadly neglected.

Spotted hyænas are nocturnal in habit, but may be seen on the move upon cool and cloudy days, and often for some time after sunrise in bright weather; indeed, I have heard them calling quite an hour after that time. They leave their lairs at dusk, and during the night travel by preference along the game tracks and native paths, sometimes patrolling backwards and forwards along one stretch for hours. In the day-time they lie up in thick bush or in long grass, occasionally, especially in mountainous country, sheltering themselves in holes and caves. I have come across individuals during the heat of the day lying in forest pools, completely immersed except their heads. They are very heavy sleepers, and it is often possible to approach quite close without disturbing them when thus occupied. When in quest of food they often follow lions and troops of hunting dogs about the country, and snatch every opportunity for a stolen repast. They have wonderfully keen noses, and can detect the slightest taint in the air at a great distance, when their signal cry conveys the information to others still farther away. It is certain also that, especially in cloudy weather, they occasionally make towards any spot above which they have noticed vultures gathering, recognising in this a tolerably sure indication of the presence of a carcase.

Although a large number of spotted hyænas may sometimes be found collected at a "kill," or following in the tracks of some of the larger game-killing animals, it is quite incorrect to assume that they are gregarious by habit. They are, in fact, solitary animals, and when a number of individuals are drawn together for a common purpose they separate, and depart singly, or in pairs at most, in different directions as soon as that purpose has been fulfilled. Normally, they consort only in the cases of a mating male and female, and of a mother and her progeny. A family party consisting of father, mother, and offspring, a common sight among some kinds of animals, is outside my experience as regards hyænas, and I do not believe that the male remains associated with the female permanently.

The young are born in old ant-bear and other burrows, within which they remain for several months, and there is no doubt that the female regurgitates for the benefit of her offspring. The number of young at a birth has been variously stated. The female has six teats, and so it seems likely that two or three is usual, but I have a

case recorded of only one embryo having been found, and a female which was shot produced a single young one in her death throes. The cubs seem to remain in company with their mothers until about half grown, and I think that in a wild state seldom more than one of each litter arrives at maturity. The young are born, as a rule, during the south African winter, and the period of gestation is about three months.

Spotted hyænas subsist principally upon carrion and bones, the latter being first cracked and then crunched up by the powerful jaws as easily as another animal would dispose of a piece of meat. Not until a tame hyæna has been kept and tested can his capabilities in this direction be properly realised. The largest bones are quickly broken up; small ones are simply chewed and bolted like so much bread. Meat is eaten without regard to whether it is fresh or in the last stage of putrefaction, and every portion of a carcase, including the intestines, is consumed. Hyænas will eat the flesh of any mammal or bird except that of one of their own kind. It is possible that cases of cannibalism occur, but I never came across one, nor remember a hyæna coming to a trap baited with the remains of another. His lack of speed and his natural tendencies prevent him from being a game killer in the same sense as the hunting dog or the leopard, but he has been known to attack cattle and donkeys, while infirm and crippled wild animals and the unprotected young of all species fall ready victims.[1] It seems highly probable that not even the young of the fiercest and largest predatory animals altogether escape the undesirable attentions of the prowling hyæna. Very young lion and leopard cubs are often left alone for many hours during the night while their mothers are away seeking their prey, and I am personally of the opinion that at such times a considerable number fall victims to this wily robber. A friend of mine once shot a hyæna, which proved to contain in its stomach the claws and part of the skin of a very young leopard, and there seems little reason to doubt the assertions of many old natives, who declare that lion cubs, too, sometimes meet the same fate. A serval, caught in a trap, was found to have been eaten out of it by a hyæna, just as a captive mouse is sometimes treated by a cat. More remarkable still was an incident which occurred in June, 1908, when Ranger Duke, visiting one of his large traps in the morning, found, fixed in the jaws, the foot and part of the leg of a half-grown leopard. It was abundantly clear,

[1] A fox terrier was seized and carried off from my camp one night by a hyæna.

from the bush signs, that this animal had been killed, dragged out of the trap, and eaten by several hyænas.

Skins, raw-hide ropes, anything with the slightest smell of animal matter about it, is liable to be taken from the camp at night by these creatures if not securely put away. I have known unopened tins of corned beef broken up in order to get at the contents. One night at Sabi Bridge, long ago, a hyæna entered the verandah of the block-house, then used as a living room, and, upsetting all the furniture, departed with a large bundle of more or less cured skins which were hanging on the wall. He had to climb up a flight of twelve steps to reach the place, and natives and dogs were sleeping close by. Another night I was aroused by the latter barking, and, running out of my hut, found a large hyæna standing in the bright moonlight in the act of trying to pull up a leopard skin pegged down just outside the door. Before the inception of the Game Reserve, while the war was in progress, Sabi Bridge had been the headquarters of a section of an irregular corps, and, there being a great deal of camp refuse to dispose of, and a large number of horses continually dying of horse-sickness, hyænas got into the habit of collecting from far and wide. As, under the circumstances, they did a great deal of good, they were very properly left alone. Consequently, in the early days of the Game Reserve, the compound used to be a resort for a great many of these animals between darkness and dawn, the nights resounded with weird sounds, and all sorts of property, including small domestic animals, was continually disappearing. It therefore became imperative to reduce their numbers, and it was not before about twenty had been trapped and shot that the nuisance began to abate.

There is no doubt that when a man has to sleep out in the open, the spotted hyæna must be reckoned a very dangerous beast. Mr. R. T. Coryndon told me that once, many years ago, he and a friend found themselves obliged to spend the night fireless and tentless in an old mealie field. Mr. Coryndon was sleeping on his back, his hands behind his head, when he was suddenly seized by the wrist and dragged right out of his blankets. He shouted at the top of his voice, and the animal let go, when he found that his wrist was rather badly bitten. Having, with the assistance of his friend, dressed and tied it up, he once more lay down, this time taking the precaution to have his loaded rifle in readiness. At the end of half an hour he saw something suddenly loom up against the sky-line just in front of his feet, and immediately firing, killed a large hyæna, which was doubtless on the point of resuming the attack.

There are many instances on record of sleeping natives having had pieces torn from their faces and other parts of their bodies, whilst sleeping round the fires at night, and I have seen men in widely separated parts of Africa who have suffered dreadful injuries in this manner.

When sitting up at night over "kills," there often occur many interesting opportunities of observing the methods of spotted hyænas. Soon after dark a long-drawn howl will be heard coming from somewhere far away in the forest. It is answered from another point, and presently the chorus is taken up from all directions. As the night draws on the cries approach closer, until at last one issues from the bush close at hand. Then follows for a time silence, but the lonely watcher can detect faint rustlings and undefined sounds in the dark covert surrounding the open space in which the "kill" lies. Now a stealthy shape shows itself for an instant on the edge of the bush, darting back again immediately to shelter. Now a maniacal shriek, one of the most creepy sounds to be heard in the African bush, smites the ear, to be succeeded by another interval of dead silence. At last, without warning, there is a rush, and a dark form dashes in at the carcase, and, seizing it, attempts to drag away the whole or a portion. A hyæna bolder than the others has at last become convinced that all is well. If lashed firmly down, as it should be, the "kill" will probably hold fast; but a mouthful of intestines, or a large piece of flesh, may be the reward of the robber, who is at once lost to sight in the outer darkness, whence arises a babel of the most extraordinary noises — weird chucklings, screams of eerie laughter, and, occasionally, the typical cry of the hyæna. Several further isolated rushes may be made, and then, if the watcher does not betray his presence, the animals will most likely close in boldly upon the bait. As a gunshot is heard very far at night, and may disturb nobler game, now perhaps drawing near, it is well on such occasions to be provided with a good supply of stones, which serve to scare away the scavengers without unnecessary noise. I once watched a hyæna manœuvring under a branch, whereon had been placed some freshly-killed meat. There was a pretty good moon, and the animal could be clearly seen running backwards and forwards at a springy trot, now gazing up at the tempting morsels, now eagerly snatching up some trifling scrap of meat from the ground. Occasionally he seemed to dissolve into the shadows of the background, to dash out and rear himself against the trunk as if to climb the tree; then he would take a succession of springs, some of them

of surprising height, straight up at the meat. During these operations he maintained complete silence.

In view of the alertness and sagacity displayed by the hyæna in the not always facile task of seeking his daily bread, as well as the extraordinary mixture of caution and boldness which he often displays, it is no wonder that the leopard is driven to place the remains of his meal in the safety of a tree when temporary absence becomes necessary. That even this stratagem may occasionally fail where due care has not been exercised, the following incident tends to indicate. As read by the bush signs on the morning following a heavy storm of rain, what occurred was as follows: A leopard had hauled a portion of an impala up a tree, and, as usual, had laid it in the fork formed by one of the branches with the trunk, at a safe distance from the ground. He had then descended and gone to the river, a mile or so away. Seizing the opportunity, a watchful hyæna, which doubtless had been hungrily eyeing him at his meal, came to the foot of the tree and gazed longingly at the delicacies there stowed beyond his reach. Now, although the height at which the meat had been placed was prohibitive, the tree itself was too small and light for its purpose, while the branches above, being of inconsiderable size, must not only have retained the carcase with difficulty, but swayed dangerously with each gust of wind. The hyæna had run round and round, leaping against the trunk, and at last, either in baffled rage or with surprising astuteness, had commenced to gnaw through it. The powerful jaws had bitten out and torn away a great deal of the wood, when either the shaking below, or some more than usually severe blast above, or both combined, had at last detached the meat from its position, so that it fell to the ground, to be immediately seized and dragged off. Unluckily for the thief, the leopard must have returned just as this happened, and the spot where the robber had hastily dropped his booty and the rightful owner recovered it was easily discernible some twenty yards away. Having regained possession the leopard had proceeded to place the "kill" securely in a large tree, where we found it in the morning.

Although, considering their size, strength, and natural powers, spotted hyænas are cowardly animals, they display at times partially redeeming qualities. It is not uncommon for individuals to rush in at the carcase of an animal killed by a lion, in order to snatch a mouthful, even when the king of the forest is still enjoying his meal—a piece of daring often paid for with life. I have seen wounded hyænas defend themselves well when mobbed by dogs, and remember

having one of the latter killed in this way. The hyæna gripped his neck for the fraction of a second, and, although there was little external mark and the skin was not broken, the dog died in a few minutes, the powerful jaws having crushed the internal organs in a terrible manner. On the other hand, a large animal, chased and held by a half-bred greyhound and a boarhound, showed very little fight. A case somewhat similar to that related by Mr. Selous, of a hyæna being attacked by and defending himself against a pack of hunting dogs (*lycaon pictus*), was noticed a few years ago in the Transvaal Game Reserve. On this occasion, though putting up a good fight, his stern against a tree, the hyæna, badly injured and much exhausted, no doubt would shortly have been killed. When a single domestic dog chases a hyæna, the latter, after decamping for some distance, will not infrequently turn round upon his pursuer, unless the latter happens to be exceptionally big and powerful.

Its voice is one of the most remarkable qualities of *hyæna crocuta*, and there are few wild animals capable of uttering such a variety of sounds or of imparting so many inflexions of tone to each. The usual note is the well-known and long-drawn "whoo-oo," the first syllable pitched in a deep bass key, while the second rises to a shrill falsetto scream. It is round a carcase that the hideous maniacal laugh, whence the animal derives one of its titles, is usually uttered; but I have also heard it when hyænas are prowling round a camp and have smelt meat. Occasionally a deep "wuff" is given vent to, and when tackled by dogs or wounded they sometimes growl. The above, however, by no means complete the catalogue of sounds of which this creature is capable. I was fishing in the Sabi one evening, a few hundred yards outside the compound fence, and the shadows had already gathered, before, having taken my rod to pieces, I began to retrace my steps. Just as I was leaving the bank a most extraordinary series of sounds came from the recesses of the bush fifty yards away. There was a shriek as of some human being in distress, followed by a number of low gurglings and chucklings, and then by another shriek. Knowing that no natives were in the bush, I stood wondering what it could be, and as I listened to the noise several of my native servants, with assagais and lights, came running at top speed through the compound gate. They at once said, in tones of relief, "We thought someone had been taken by a lion." The sounds still went on, now recalling the wails of an infant, when suddenly the familiar "whoo-oo" set all doubts at rest as to the nature of the animal.

Hyænas come freely to baits, and are constantly caught in traps and shot by spring-guns. They show great audacity, and I have often known one lightly caught drag away the bait after releasing himself. Sometimes, too, they will step over the carcase of a leopard already killed by a spring-gun set over his "kill" in order to get at the latter. So powerful are the hyæna's jaws that the tongue of an iron trap is often bitten out or so badly twisted as to render the implement unserviceable for the future.

Although hyænas must be considered noxious vermin on account of the damage they inflict upon stock, game, and occasionally human beings, it cannot be denied that they fulfil very useful purposes as scavengers; they will eat any kind of offal, and share with the vultures the credit of keeping the bush free from many distressing odours.

If caught young *h. crocuta* becomes very tame. We kept one at Sabi Bridge which knew its name perfectly well, and displayed considerable docility and affection. In fact, when I visited it at the Pretoria Zoological Gardens some weeks after its arrival there, it recognised me at once, and executed a series of clumsy gambols round its cage on hearing itself called by name.

CHAPTER XV

CANIDÆ

Jackals—Foxes—The African Hunting Dog.

THE group of carnivorous animals known as the *canidæ* include the dogs, wolves, jackals, and foxes. The members of it possess elongated muzzles, a large number of cheek teeth, limbs built for speed, and non-retractile claws. All are gifted with high intelligence, of which the capacity for combination shown by some species is one of the most obvious outward manifestations.

The Black-Backed Jackal (*canis mesomelas*).—This animal is slightly larger than an English fox, and is much the most handsomely coloured member of the genus. The back is black, interspersed with white hairs; the sides of the body and limbs are rufous, which becomes paler on the underneath parts. The ears are comparatively large, and the muzzle sharply pointed; the tail bushy with a black extremity, a few white hairs being sometimes present at the tip. Individuals, however, tend to vary even when of similar sex, and at the same time of year; grey hairs occasionally predominate over black ones on the back, the rufous colour of the sides varies in tone, and the definition between the tints of the back and sides is not constantly sharp in all specimens.

The black-backed jackal ranges through the equatorial region from Abyssinia to Cape Colony, wherever the environment suits its habits. It prefers open, or lightly-forested country, and by day lies up in thickets or long grass. When hunted by dogs it will sometimes go to earth, and the young are born underground. It is an extremely alert and cunning little animal, possessing a high turn of speed, as well as a considerable amount of daring. In habit it is rather solitary, though, like all scavenging species, individuals are prone to collect where carrion lies. Mating pairs are often seen together, as well as females with one or more well-grown whelps. Where not much disturbed, the animal is partially diurnal in habit. Its senses are very acute, and when alarmed it moves away at a light, springy gallop.

The cry of the black-backed jackal is a shrill "Yaaa-ya-ya-ya-ya," repeated quickly several times.

Besides eating carrion, eggs, locusts and other insects, and reptiles, it preys upon all wild birds it can catch, especially ground francolins and guinea-fowls, while it is a dire foe to the poultry farmer. Among mammals practically all that can be overcome are devoured—rats and mice, small mungooses, hares, and the young and even half-grown of the smaller antelopes up to the size of duikers. The latter are often run down in fair chase, for this animal can move with great speed, and rangers have recorded having witnessed such hunts upon more than one occasion. It does great damage to sheep farmers by killing lambs, and, principally on that account, a war of extermination has been waged upon it through many parts of south Africa. I have seen these jackals eating pythons, and it is quite possible that the native testimony as to their occasionally killing these reptiles is quite correct. It is said that when *mesomelas* finds a python asleep in the grass, especially when helpless after a heavy gorge, he watches his opportunity, and, springing in, seizes it by the head. If the snake is a very large one, he inflicts one severe bite, and instantly leaps back out of reach, awaiting another chance; but where a small individual has to be dealt with, he maintains his hold, and rushes off dragging it along at full speed, so that it may be unable to secure a purchase with its tail. Should it succeed in doing so he lets go at once and springs out of harm's way. On the other hand, a python in ambush, and on the look out for prey, will catch and swallow a black-backed jackal as readily as it will any other animal of the same size.

The Side-Striped Jackal (*canis adustus*).—This is a rather larger and stouter built animal than the last, but lacks its alert appearance and active ways. The usual colour is silvery grey, with a brownish tinge; a white and a black stripe run horizontally on either side of the body; the face and limbs are rufous, and the tail has a white extremity. The muzzle is less slender than that of *c. mesomelas*. Skins display great variability in colouration, and, out of a series of twenty or thirty, it is seldom that two are marked exactly alike. They range through all shades of grey, from pure silver to very dark, and sometimes are almost wholly russet brown. The stripes, too, vary in intensity, in some specimens being very clearly marked, while in others they are nearly indecipherable. When parturient the female occasionally, and for the time being, seems to change the shade of her coat, and I have seen skins of animals killed while in

this condition which displayed a universal shade of pale brown or ochre throughout, with little indication of side stripes.

The range of this jackal extends from five or six degrees north of the Equator to as far south as Zululand. In the eastern Transvaal it favours rather more thickly wooded country than the other species. It is sometimes found in the dense thorn bush of the Sabi; while just outside that belt, where the forest is sufficiently open to admit of a horseman moving with comfort at a slow pace, it is very numerous indeed.

By nature the side-striped is much more sluggish than the black-backed jackal, and is also more nocturnal and solitary in habit. By day individuals lie up in bush, issuing forth at night to seek carrion, or to prey on small mammals and ground roosting birds. *C. adustus* is a dangerous poultry thief, and one used to lie in wait regularly, just outside our compound fence, in order to catch such fowls as wandered far afield in the early mornings. It was only after a considerable number had thus disappeared that the depredator was discovered, and dealt with. The species is, however, not entirely carnivorous, and, in addition to locusts and other insects, will eat certain wild fruits, among them that of *zizyphus mucronata*. I do not think it ever attacks mammals of larger size than a hare, and it relies on catching its prey by pouncing on it, and not by running it down, its speed being comparatively slow. It seems, moreover, relatively a little deficient either in power of sight or hearing, as, when the wind blows favourably, it is often possible to approach individuals unnoticed within a distance which would be almost impossible were *mesomelas* in question. Constitutionally it is rather timid, and generally makes a poor fight against dogs. When attacked by the latter it sometimes seeks to escape by shamming dead. I remember that one animal, after being worried by a dog, lay quite limp on the ground for a few moments, and then suddenly sprang up and made off. Upon being again caught, it repeated the trick; but as soon as the dog dropped it, instead of running away, it sprang at his throat. It received a third shaking, and was again quiescent during the process, but rushed a second time at the dog immediately after release. I think the pluck of this animal was very exceptional for one of its species.

Side-striped jackals go to ground readily, and the young are born in holes, usually those discarded by porcupines or ant-bears. The number at a birth seems variable. I have noticed three and four on several occasions, but Wolhuter records having shot a female which

proved to contain no less than twelve perfectly-formed whelps, and natives say six are fairly common. In view of their large birth-rate and the short period of gestation—only some nine weeks—it is obvious that there must exist a correspondingly high rate of infant mortality, otherwise the species would exist in very much greater numbers than is actually the case. The young seem to be left to themselves at a comparatively early age; for animals less than half grown have been found foraging on their own account, and I think as soon as they are weaned, and able to leave the nest comfortably, the mother does not trouble very much further about her offspring; which may possibly provide a reason for the failure of the majority of the whelps to survive. In the eastern Transvaal litters usually seem to be born in the winter, and have been taken from June onwards.

Side-striped jackals become quite tame if caught young, and even full-grown animals, though inclined to show their teeth, soon eat and drink regularly, and, after a time, resign themselves to the new life with equanimity.

The call of the species is a single cry midway between a howl and a bark.

Other recognised species of African jackals are:—

The Egyptian Jackal (*canis lupaster*), the largest of the group.

The Morocco Jackal (*canis anthus*).

The Variegated Jackal (*canis variegatus*), from Abyssinia and Somaliland.

The Pigmy Jackal (*canis mengisi*), from Somaliland.

The Silver Fox (*vulpes chama*).—With this species we come to the fennecs, or African foxes, which are of slighter build than the jackals, and possess more sharply pointed muzzles, and longer and more bushy tails. The general colour of this fox is silvery grey, the underneath parts being tawny in hue. The fur is very soft and thick. The tail is long and bushy, the hairs of mingled yellow and black, and the tip of the latter colour. The ears are long and pointed.

This fennec is peculiar to south Africa, and is there found from German territory across Cape Colony and the Orange Free State, to Natal. It favours high upland country, and does not appear ever to have been very common.

Its diet consists of insects and wild fruits.

Two other African species are known.

Delalande's Fox (*otocyon megalotis*).—In colour and shape rather like the silver fox, this genus is distinguished by the greater number

of molar teeth, and by its somewhat longer ears. There is a dark streak running through the eyes and down the centre of the nose, and the toes are black.

This fox is found chiefly in the western and drier parts of south Africa, and has also been found in east Africa and Somaliland.

It affects dry uplands, and its food consists of mice, insects, fruit, and perhaps small birds.

The Cuberow (*canis simensis*).—Though known as the Abyssinian wolf, this animal is really more akin by nature to the fox. It is local and rare, and has been seen principally among the Simien mountains.

The African Hunting Dog (*lycaon pictus*).—It is a peculiarity of south African nomenclature that many species have received colloquial designations, not only in no way suited to them, but sometimes actually the property of entirely different animals existing in other parts of the world; while it not uncommonly occurs that the name given to a certain type might be not inaptly applied to another inhabiting the same locality. Thus a leopard is called a "tiger," a giraffe is known as a "camel," and a hyæna as a "wolf," while the present species, whereto the latter term would, perhaps, be more appropriate, is a "dog." The name "dog," in fact, is not at all descriptive of *lycaon pictus*; for there are few other members of the *canidæ* family differing more widely from the true dog, and he is a remoter relative to the latter than either the wolf or the jackal. The animal is, indeed, the sole living survivor of its genus, and differs from all the members af the group *canis* in having only four toes to each forefoot.

In appearance the hunting dog is large and powerful, standing between two feet and two feet and a half at the shoulder, a male weighing about sixty pounds; his muzzle is relatively short and broad, while the great upstanding round ears are among his most striking characteristics. The body and limbs are marked in patches of black, white, and khaki; the tail is bushy with a white tip, and there is a moderate throat ruff. The animal possesses a curious outer skin, which contains the roots of the hairs, and which is very easily separated from the thicker tegument beneath; consequently, unless a specimen is skinned very soon after death, this outer envelope quickly shrivels, and peels off in the sun, thus spoiling the trophy. Although the limbs are long and powerful, and the forehand massive, nevertheless the animal falls away behind; a circumstance, which, taken in conjunction with its habit of carrying the head and tail depressed when moving at its ease, gives it rather a hyæna-like

appearance, and is responsible for the term "hyæna dog" formerly applied to it, though in no other point either of physique, disposition, or habit, has it the remotest resemblance to that professional scavenger. *Lycaon pictus* has a very strong and distinctive odour, and, under certain atmospheric conditions, the proximity of a pack is quite obvious even to the human olfactory sense.

Naturalists have divided the hunting dog into several local races, and it seems probable that the tendency of the species is to become larger in size and lighter in colour the further it ranges south. The types found in Somaliland and British East Africa are relatively small in size, and the black in the coat strongly predominates, while the extreme southern representatives from Cape Colony, besides being much bigger animals, have ochre or buff as their main colour, and comparatively little black present. Between the two extremes are all kinds of variations. In the north-east Transvaal, southern Rhodesia, and neighbouring province of Moçambique, the three colours are, on the whole, evenly distributed, in some specimens one hue predominating, in others another. There is no doubt, however, that the males generally are very much darker than the females and immature animals; some of the former, especially old ones, having hardly any white upon them at all, and the yellow of a dark and dull shade; while among the latter, many—though not all—individuals are brilliantly marked in big splashes of yellow, white, and black. During the winter season, too, the coats of both sexes are longer and duller than in summer. In the Transvaal Game Reserve it has been possible to compare a very large number of skins, obtained at all times of the year, belonging to animals of both sexes and of all ages; and the manner in which, up to a certain point, the markings vary in shape and proportion, in different skins, is notable. These patterns, as well as the size of individual animals, frequently present so many variations, even within the same areas, that, without a large number of skins to compare, it is dangerous to draw any conclusions as to definite divergence of type between animals frequenting adjacent districts. I shot a male and a female out of the same pack on the same day, which are now set up in the Transvaal Museum at Pretoria. The male is very dark in colour, with little white or khaki on his body, and less than half the tail white. The throat is patched with dull ochre. The female, on the other hand, is very brightly marked, more than half the tail is white, and the throat and shoulders almost yellow; no two animals could be less alike in hue. They were both killed at Sabi Bridge.

In the Zoological Gardens at Pretoria I saw eighteen whelps about three months old, all of which came from the same part of the Rustenburg district. There were hardly two of them marked alike; some had heads nearly all black, others nearly all brown; some had almost the whole tail white, others had the merest spot of that hue at the extremity, while one had actually no white on its tail whatever. The body markings displayed every conceivable combination of shade and pattern, and the tracings on the legs were equally varied. In face of this it seems futile to attempt to separate subspecies among the hunting dogs of central south Africa by the aid of colour markings. The Transvaal possesses a small game reserve lying between Swaziland and Zululand, and separated by the former country from the larger reserves to the north. A pack of hunting dogs from Zululand habitually crosses the Pongola river at certain points, when the water is low, and then sweeps through the small strip of Transvaal northwards to the low-lying bush country which intersects the middle of Swaziland, penetrating certainly as far as the Usutu river. The same or another pack hunts the Portuguese country to the east of the Lebombo Hills from Amatongaland to the Maputa river (as the combined streams of the Usutu and Pongola are called). North of the Usutu, Swaziland is hunted by a pack which ranges as far north as the Crocodile river in the north-eastern Transvaal, and likewise crosses to the east of the Lebombo. If a pack can periodically cross the Pongola, as it certainly does, it is probable that it also can traverse the shallower, though wider, Usutu and Maputa at favourable times and places, and therefore that its range overlaps that of the animals from northern Swaziland and the north-eastern Transvaal, and *vice versâ*. It is, therefore, difficult to appreciate that there can exist a typical difference so marked as to afford proof of racial distinction between the hunting dogs of the north-eastern Transvaal and southern Moçambique on the one hand, and those of northern Zululand and Amatongaland on the other; though no doubt in each successive southerly habitat the species follows its destiny in gradually tending to assume a generally lighter hue.

The range of the hunting dog comprises the greater part of Africa from the Sudan to the Cape, and no doubt extends to some regions whence its existence has not yet been reported. Notwithstanding its wide distribution, it is an animal comparatively seldom encountered by the sportsman, a fact largely accounted for by its restless habits and the vast areas which it unceasingly roams over.

A Pack of African Hunting Dogs (*Lycaon pictus*). (North-eastern Transvaal.)

African Hunting Dog from the North-eastern Transvaal.

It is met with alike in open and in bush country, wherever game exists, water is to be had, and the forest is not so dense as to impede its pursuit of prey. It is gregarious, associating in bands, the size of which is largely dependent upon the food supply of the district. The pack which hunts the country between the Sabi and Crocodile Rivers in the Transvaal Game Reserve, and which ranges over an area of some 1,500 square miles, well stocked with impala and reedbuck, consisted, before it had been artificially reduced in numbers, of between sixty and seventy individuals. A second pack, having a very wild range, from the Sabi on the south to the Olifants River on the north, and from the foothills of the Drakensberg on the west, nearly to the Limpopo River on the east, was never quite so numerous, in spite of the wider area at its disposal. In early south African days Gordon-Cumming and others have recorded bands of several hundreds, and, in view of the enormous numbers of the herbivorous animals then existing, there was probably nothing unusual in such a sight.

Hunting dogs are mainly diurnal animals, in so far that the greater part of their hunting takes place between the first streak of dawn and the first hour after sunrise, and again from about an hour before sunset until dark. When the moon is good, however, they often pursue the chase far into the night, and once, under a full moon, they pulled down a half-grown male waterbuck close to my camp at Tshokwana about 12.30 a.m. At other times, their rallying cries have been heard as late as 10 p.m., while I have known them hunt all day in cloudy and cool weather. Normally, however, the morning hunt ceases soon after sunrise; the scattered units, mutually guided by the assembly call, join up, and, after a short rest, proceed in leisurely manner towards the nearest water, being continually joined on the way by stragglers from all directions. In drinking, deep pools and large rivers are, as far as possible, carefully avoided, no doubt from a lively fear of crocodiles, and shallows near the main streams or small pans in the otherwise dry sand-spruits are preferably chosen. Having satisfied their thirst, the pack next seek some sandy stretch—the bed of a dry watercourse or river bank—where, if the hour is still early, and the sun not too hot, the members will roll and bask, while truants keep dropping in. Later, as the day gets warm, repair is had to the shade of a tree, to a cool clump of reeds, or to a patch of undergrowth, where sleep is indulged in during the hot hours. As the shadows begin to lengthen, and the air cools, the time approaches for another visit to the water, immediately after which comes the evening hunt. This over, they may drink again should there be

sufficient light; but, generally speaking, I do not think hunting dogs care about moving through the bush on dark nights, and at such times the pack usually rests, huddled up together for warmth and mutual protection. When returning to camp late one night I came on a number apparently sleeping, in the midst of a dense thicket, and no doubt this is a general practice.

There is no other predatory animal in Africa responsible for so much disturbance of game as the hunting dog, and, in proportion to his numbers, there is none which deals out more wholesale destruction. A pack, descending suddenly upon a district, scatters the game far and wide, and it is not difficult to discern from the restless and uneasy manner of the impala and other antelopes, as well as from the fact of the herds being split up and scattered into small parties, that these bush pirates are on the war-path. The disturbance which their presence causes being so intense, the area quickly ceases to supply them with food, and they are consequently obliged to move on elsewhere; the frightened game, when assured of their departure, closing in once more behind them. It follows, therefore, that the range of each pack must be a wide one, and the life of every individual composing it so necessarily strenuous that none but the very fittest can survive. Nature thus provides that the increase of these destructive creatures shall not be unduly large, and, from this and other reasons presently to be adduced, the numbers present over any given area of country are generally less than those of some of the other species of greater carnivora; though because they are seen associated in large troops, and may appear in two widely-separated localities within a surprisingly short space of time, they are often believed to be far more numerous than is actually the case. In order to arrive at an approximate estimate of the movements and total of the hunting dogs in the Reserve, notes, extending over some years, have been made by rangers whenever a pack has appeared in their several districts. A comparison of these shows that within the area between the Sabi and Crocodile Rivers on the north and south, and the Drakensberg Mountains and the Lebombo Hills on the west and east, hunting dogs have never been reported present in more than one ranger's district at the same time, and their progression has been rotatory: that is to say successive reports indicate that they have reappeared after fairly regular intervals in each district, remained for some days, or weeks, within it, and than have been temporarily lost sight of, to be shortly reported from the neighbouring area. At Sabi Bridge, some nine years' observation of their habits has shown that

they nearly always have approached from the same direction, namely from the west, have hunted down the Mutshidaka Spruit to the Sabi, and then, in the dry season, along that river for some forty miles to the Lebombo, whence they have turned south towards the Crocodile. In the summer they cross the Selati Railway, and work the series of small tributaries which run into the Sabi from the south; eventually reaching the Crocodile system, and so back towards the west. I speak, of course, of the movements of the main body; but so far does the chase sometimes lead, that individuals and small parties may be separated from the majority of the pack for many days and even weeks, and therefore may be encountered in all sorts of unexpected places. I remember, while the bulk of the southern pack was near Sabi Bridge, four stragglers ran into and killed a duiker by my camp twelve miles up the Sabi. The movements of the troop north of that river are more difficult to follow, both because the area is much larger and because the animals disappear into Portuguese territory, sometimes for months at a stretch; but records have been kept as far as possible, and, so far as they go, they show a fairly regular method of progression. Naturally, as game increases, so hunting dogs, unless artificially kept down, will tend to become more numerous, and small detached parties, finding themselves in a well-stocked country may become the nucleus of a fresh pack. Of this there was an example just north of the Sabi, where a small detachment from the northern pack, broken off in the course of some long hunt, more or less allocated to themselves for a time an area of thirty or forty miles of country.

Few wild beasts display more sagacity in pursuit of prey than this one. Watch a pack in the grey morning light as they quarter the bush in quest of some unsuspecting herd. They ramble along at hounds' pace, each individual with head and tail held low, and in perfect silence; a silence which, by the way, is never broken throughout the whole course of the hunt. On coming on a fresh "line" there is no increase of pace, but the leaders prick their great round ears and jump at intervals straight up and down to get a view over the top of the grass and low scrub. Now some impala can be seen down an aisle of the bush calmly browsing, and immediately the whole pack spreads out noiselessly so as to, as far as as possible, encircle it. A ewe raising her head quickly, in an interval of feeding, catches sight of one of the sinister forms stealing from bush to bush; she snorts loudly, and, in a moment, as by one impulse, the pack dashes in. Away in all directions, and in the extremity of terror,

dash the antelopes, springing high into the air, and, in the confusion, often impeding one another in their frantic efforts to escape. One or two are instantly seized and pulled down, and the rest of the pursuers, splitting up into small detachments, relentlessly pursue the unfortunate individuals which they have singled out. There is seldom any escape; gifted with marvellous speed for a short distance, and with immense endurance where the chase is long, the hunting dog is served when occasion demands as well by his powers of scent as by his muscular limbs, and fortunate indeed is the creature, which, once having formed his quarry, can safely win out. The actual method of chase has often been described. The pack lopes along some yards behind the intended victim, each individual in turn spurting up alongside to spring at the flank or quarter, tear away a mouthful of flesh, and then drop back level with his companions. Soon exhaustion and loss of blood tell their tale, and the hunted animal falls to the ground, when the pursuers rush on it like hounds into a fox, tearing it to pieces and devouring it in an incredibly short space of time. It is a ferocious method of hunting, and the state of the quarry when at length pulled down is often pitiable in the extreme. Two hunting dogs once ran into an impala ewe close to one of my camps on the Sabi. They were at once driven off by the natives, and the ewe was still alive, and trying to rise, when I came up. She was in an appalling condition: both her flanks torn open, the entrails which had not already been pulled out and devoured trailing on the ground, and the flesh of one quarter stripped entirely off from the base of the tail to the point of the hock, so that the bone showed throughout. During the lambing time of the impala and reedbuck, the young of these species seem, together with the parturient ewes, to form the principal prey of *lycaon pictus*, and the number of recently-born animals destroyed is enormous. I remember following a pack of about thirty, which for two days, about the end of November, had been playing havoc among the young impala near Sabi Bridge. I counted at least a dozen kills within a radius of less than a mile—all those of small lambs. An impala of about a week old forming one meal for a single dog, and their being but little difficulty in running it down, the harm that is done to the increase of the herds in this way may easily be realised. I crept up to three dogs which were busily employed in eating a young buck, and was struck by the frenzied haste which they showed in rending it in pieces and bolting the flesh in huge lumps. One instance will serve to indicate the rapidity with which these animals dispose of

their food. Two native police, stationed at one of our picquets, heard a duiker cry out close by. Pausing only to seize their spears from the hut, they ran to the spot, hoping, of course, to secure some meat for themselves; but, although between the time of the first alarm and their reaching the place barely three minutes could have elapsed, nothing remained on the ground except a little blood and some pieces of skin, while three or four hunting dogs could be seen decamping through the bush.

One of the reasons why the wild dog is so terrible a foe to game, lies in his wasteful method of hunting. For example, two or three individuals, having pulled down an impala or reedbuck, will eat as much as they can conveniently stow away, and then, leaving the carcase just where it happens to lie, will leisurely proceed to rejoin the rest of the pack. The remainder of the meat is abandoned to the vultures, and on the following day a fresh victim is pursued and slain. Unlike the felines and viverrines, *lycaon pictus* takes no precautions to preserve his food against the professional scavengers of the forest, having no intention of returning for a second meal. Hunting dogs live entirely upon animals which they have killed themselves, and very rarely touch carrion. We have seldom caught them in traps, and most of those so taken were either animals old, and so unable to keep up with the pack, or injured in some way. I once shot a female while in the act of feeding on an abandoned leopard kill; but, on examining her, I found that a bullet wound in the quarter, inflicted apparently about a month before, had rendered her incapable of hunting.

This contempt of any but fresh meat renders hunting dogs more than usually difficult animals to deal with. Traps and poison seldom avail against them, at least in districts well stocked with game; for where food can be easily secured, and where consequently there is no necessity to return to kills, the area in which a pack is found to-day is precisely that wherein it is unlikely to be met with to-morrow. The rifle must therefore generally be the most useful agent in keeping down their numbers. If the breeding holes of a pack can be found it may then be possible to poison or trap a good many of the females, and capture the whelps; but, unless steps are taken immediately the place is discovered, the mothers are likely to return and remove their offspring elsewhere the moment the coast is clear. A ranger once poisoned eight at the carcase of a cow waterbuck which they had just pulled down. He restrained the impulse to fire, and contented himself with merely driving them off without alarming

them too much. He then poisoned the kill as quickly as possible and withdrew. The dogs, which had only withdrawn to a short distance, returned as soon as he was out of sight, with the result stated. Of course, it is not everyone who habitually goes about carrying a bottle of strychnine in his pocket. In parts of Cape Colony, where at one time wild dogs were a terrible scourge to stock, their reduction was materially assisted by laying a drag, and placing small pieces of poisoned meat at intervals along its course. This plan has, however, not proved efficacious in the Transvaal low country.

The usual prey of these voracious creatures consists of impala, reedbuck, bushbuck, duiker, and steenbuck (in south-east Africa), but when pressed by hunger they will not hesitate to attack larger and more formidable species. Ranger Wolhuter once saw a pack pursuing a single sable antelope, but was unable to ascertain whether they killed it or not. Waterbuck and kudu cows, and immature animals of both sexes belonging to the larger species are sometimes killed, but in the Sabi Reserve, at any rate, where small buck are plentiful, their attention is almost entirely confined to these. A troop was once seen running a side-striped jackal, and we have recorded instances, one of which was quoted in a previous chapter, of hyænas having been mobbed; though whether such attacks were undertaken with, in the first instance, the object of devouring the latter, or merely as acts of revenge, consequent on the hyæna having attempted to snatch some of their food, is doubtful. A leopard certainly recognises dangerous enemies in a pack of hunting dogs, and seeks refuge in a tree on their aproach. The tales which are current of their driving away lions from a district are no doubt much exaggerated. Lions seldom hunt singly, and the reason which causes them temporarily to abandon a small area, upon which a pack of hunting dogs has descended, is more likely to be the resultant scattering of the game, than any personal apprehension. What may, and probably does, happen is that single lions, past their prime and leading a solitary existence, become, now and then, the quarry of a pack hard pressed by hunger. On finding himself thus pursued the lion would probably do his best to escape; but, when eventually brought to bay, I think he would have little difficulty in routing his assailants, unless they were very numerous, or he very decrepid and weak. Judging by the difficulty which more than a dozen of them found in overcoming a hyæna, it seems likely that they would fare badly in attacking a lion, even were there three or four times as many present. On the other

hand, lions not infrequently kill and eat hunting dogs. The latter are said seldom to attack full-grown male warthogs and bushpigs, but prey on the females and immature animals.

Although hunting dogs are expert swimmers, they more often than not decline to cross deep water, even when hot on the heels of their quarry. This unwillingness is, no doubt, due to fear of crocodiles, and hunted antelopes seem to be well aware of and to take advantage of it. During the dry season, when the buck are collected near the Sabi, they invariably make for the river if pursued, and every winter there are numerous cases of impalas being chased into the compound of the station, or across the river. The pack almost always relinquishes the pursuit as soon as its quarry has plunged into deep water. I once had a very good view of a chase from the verandah of the blockhouse. An impala ram came down the opposite bank of the river, followed, at a distance of about fifty yards, by seven or eight dogs. As soon as the latter saw the glint of the water, they increased their pace, and had drawn up very close to their intended victim when he reached the river. The impala swam straight across, and two or three of the leaders leaping in began to follow; but after swimming a few yards they evidently thought better of it, and turned back to their companions, when the whole pack moved slowly away. Exceptions, however, occur. On another occasion an impala took to the water a little below the station, and swam across a deep and strong-running channel, some thirty yards in width, to an island. The pack of hunting dogs which was in pursuit halted on the brink, all except one, which boldly plunged in, crossed to the island, and there killed the buck, swimming back to the mainland after he had eaten as much as he wanted. This is the only case I ever knew of the pursuit being maintained through deep water; but instances constantly occur of game being chased across shallows, and killed in the water itself.

Troops of hunting dogs often show great indifference to man's presence, and a reluctance to retire before him, which is often, and I am sure quite wrongly, put down to the natural ferocity and fearlessness of the animals. It is probably due to the comparative immunity which, in wilder parts of the country, they enjoy from the hunter, whose time is much too fully taken up, as a rule, in the pursuit of game, to allow him to spare much of it for the arduous business of seeking and following so migratory and unprofitable an animal as the wild dog. After having been systematically hunted and shot at for a time, there is no animal which seeks safety quicker;

and the pack south of the Sabi in the Game Reserve, which has undergone considerable experience of man and his ways, latterly invariably have turned down wind on finding themselves followed, so that they may be able to detect the near approach of their enemies laboriously toiling on their tracks. Where they have not been much disturbed, they will allow a man to approach within forty or fifty yards of their lair before rising, when they will spring to their feet, uttering barks of alarm, and jumping up and down the better to see the intruder. After a time they will make off at a loping canter for perhaps a hundred yards, when they will stop for another long stare, subsequently, if not too closely pursued, retreating with such leisurely indifference that the sportsman, by taking short cuts, and hurrying his pace, can usually keep on terms with them. If they have small previous experience of the rifle, the overthrow of one or two of their number at the first encounter does not appear to alarm them unduly, and a good many may be bagged before they realise the danger. The troop will often wait for a wounded companion to rejoin them, a display of loyalty most serviceable to the hunter.

In east Africa they are often extremely unconcerned in demeanour, many of the huge packs which roam about having, perhaps, never had a shot directed at them. From the window of a carriage on the Uganda Railway I saw four of the animals at the side of the line, and not thirty yards distant from the train, engaged in eating a Grant's gazelle. They merely raised their heads for a casual glance and went on with their meal, so that they evidently more than shared the indifference to passing traffic displayed by the other wild animals present in that remarkable country.

Their ignorance of man's capabilities for mischief, due entirely to their inexperience of him, has been the source of many extraordinary "hunter's yarns." The agitation and surprise which the unwonted sight of a human being causes among them is frequently considered to be the prelude to an attack, and the person concerned believes, and ever afterwards states, that he has had a most narrow escape. These stories lose nothing by repetition, hence the blood-curdling tales which are sometimes related both verbally and in print. It is, of course, quite possible that in a starving condition wild dogs might prove as dangerous to human life as wolves elsewhere. Like domestic dogs, they are prone to chase anything that runs away from them; but whatever they may, collectively, be capable of, I know no beasts of prey, which, singly, show less disposition to turn upon their enemies. I have seen a great number of wounded ones dispatched

with a stick, and, though they have sometimes bitten the weapon used against them, I never knew one of them make the slightest attempt to revenge itself upon a human adversary, nor, in fact, do anything except try to escape. There is no gleam of rage in the large brown eyes, such as is always apparent in those of cats in similar straits; but rather the appealing and frightened look worn by a domestic dog when injured. Nor do they display much pugnacity, so far as my experience has gone, when tackled by courageous dogs; though one of the latter, should his heart not be quite in the right place, may hesitate to go in at his sinister-looking cousin, as, wounded and unable to escape, it faces him in grim silence. We have had instances in the Reserve, however, of hunting dogs having been pulled down without much difficulty when resolutely attacked, and I recollect at Sabi Bridge a large rough mongrel seizing by the throat and worrying one without meeting with any resistance. On the other hand, a party of hunting dogs would probably chase and immolate any single domestic canine which was unfortunate enough to cross their path.

Hunting dogs are very hardy and tough, and will go long distances after having received very severe wounds. I have heard the theory expressed, among low country residents of experience, that, owing to their purely flesh diet, these animals display a certain want of recuperative power, and therefore that one wounded is as good as dead. It is sometimes stated also that a wounded beast is killed by the remainder of the pack. I believe both these ideas to be erroneous; at any rate they are by no means borne out by the experiences of the staff of the Game Reserves, which are, as regards the former, that where the wound is so situate that it can be licked by the animal's tongue, a very good recovery indeed is made. A female running with a pack was found to have had the off foreleg shot away about two inches below the wrist joint, apparently a month or so before. The stump was still raw at the extremity, but perfectly healthy in colour; the skin was even beginning to grow over it at the edges, and, to all appearance, in a few more weeks would have been perfectly cured. She seemed able to get along quite well on three legs; her coat was glossy, and she was in quite as good general condition as other members of the pack killed at the same time. Wolhuter killed a very old male. One hind leg had been shot away just below the point of the hock, and the stump was completely healed, while that a foreleg had also been broken on a still earlier occasion was evident from the presence of a large knob

at the seat of injury. This animal was also running with a pack. In a case where I killed one suffering from a bad suppurating wound, the latter was out of free reach of the tongue. No doubt males partially crippled fare worse than females at the hands of their companions; but if an animal is able to hobble along in the track of his troop by aid of eyes and nose he will find, as a rule, a sufficiency of discarded victuals to maintain his strength.

I have known individuals when wounded yelp much like domestic dogs; but as a rule they maintain silence, both when first hit and when being dispatched at close quarters with sticks or spears.

The hunting dog possesses three distinct calls. The best known is the peculiar and rather plaintive howl usually heard after nightfall and in the early morning: this strongly resembles the last note in the call of the common cuckoo, and is repeated from eight to a dozen times in quick succession. It is the rallying cry used to collect the individuals of a pack, and to communicate the whereabouts of each after a hunt. When suddenly disturbed or alarmed hunting dogs spring to their feet uttering hoarse barks, much more resembling those of baboons or bushbucks than of domestic dogs. When at a kill, and also, I believe, at mating times, they give vent to a curious whining chatter, probably expressive of satisfaction.

The young ones appear to be born, in south-east Africa, from March onwards to September; but the favourite month seems to be April. Born then, the whelps are big enough to do their duty in the pack when the great carnival among the young game sets in towards the end of the year. At that time a good many animals of seven or eight months old are always seen with every pack. I have usually found fresh breeding holes in April or May. The eighteen whelps at the Transvaal Zoological Gardens, mentioned elsewhere, were about three months old in August. As in nearly everything dealing with wild animals, however, it is unwise to attempt to be dogmatic. Ranger Duke killed in December a female containing two whelps nearly ready to be born, and in the same month a native reported having seen animals about two months old accompanying their mothers. The number born at a time is certainly variable. Two or three have been seen on separate occasions following single bitches, and probably from two to six may be the complement of a litter. I should imagine the latter figure to be rather the exception, and the large number of whelps often found associated in one earth is due to the fact that several females are accustomed to use it as a nursery at the same time. A number of adjacent ant-bear holes, preferably

surrounded by thick bush, and near water, are chosen; they are further excavated and improved until quite a large chamber has been hollowed out, and grass is brought inside to form bedding. In this chamber the progeny of several mothers huddle promiscuously. The latter, for the time being independent of the pack, continue to hunt together in the vicinity, returning at intervals to the mouth of the burrow, where they whine for the little ones to come out and be suckled. The mothers undoubtedly regurgitate also for the benefit of their offspring; the outside of the "nursery" bears abundant evidence of this. The tenancy lasts probably for a couple of months or so, in fact until the youngsters are able to go abroad with their mothers, but they do not join up with the pack for a month or two more. Infant mortality is considerable, almost excessive. Intestinal inflammation carries off a number of the whelps in captivity, and may possibly also affect them in a wild state. No doubt, too, the hard and strenuous life which the dam must necessarily lead has much to do with it. Whatever the cause, it is certain that a very much smaller percentage of a pack of hunting dogs consists of the current year's young ones than is the case in a herd of antelopes. Males appear to be more numerous than females. In the monthly returns of vermin destroyed I asked the rangers to note the sex of any hunting dogs included in the list, and the result of a comparison of returns from all parts of the Reserves, at the end of two or three years, was that the total of males killed exceeded that of females in a proportion of six to four. As we generally endeavoured to shoot at females, it is probable that this is no exaggerated estimate of the relative proportions of the sexes actually obtaining.

Hunting dogs, when caught young, become quite tame and friendly with their masters, but never quite lose their wild instinct, and, when grown up, are not very reliable in temper. A low country resident once kept two half-grown ones, which accompanied him on his hunting trips; but he said he could never teach them to be really obedient, nor to refrain from running in and tearing at fallen game, though he found them tolerably amenable in other particulars. I have found small whelps very friendly indeed, and they whine and yelp much like ordinary puppies.

CHAPTER XVI

MUSTELIDÆ: ORDERS RODENTIA, EDENTATA, AND PRIMATES

MUSTELIDÆ

THE Cape Otter (*aonyx capensis*).—This is the largest of known old-world otters. Its cheeks, chin, and throat are yellowish white. The fore toes have no claws, and are webbed at the bases only, while the hind feet are more fully webbed, and possess rudimentary claws on the third and fourth toes.

Aonyx capensis is distributed over most of Africa south of the Equator, and is found frequenting all the streams in the north-east of the Transvaal. It appears to spend a good deal of its time on land, haunting dense bush, and lying up in holes in the neighbourhood of the main rivers, and of the shallow pools found along the course of tributary sand-spruits. Its food consists of fish, frogs, and fresh-water crabs. I have not personally come across any instances of its having killed waterfowl, though it is said to do so. Seeking their prey, as they often must, in waters teeming with crocodiles, African otters have to be exceptionally wary and quick; and though, no doubt, their habits, when resting and sleeping, are considerably influenced by fear of these reptiles, under ordinary circumstances they are well able to elude their attentions. The following little incident will illustrate this. A ranger fired at and wounded an otter, which he saw fishing in a deep pool of the Olifant's River. Although up to that moment there had not been a sign of a crocodile, almost immediately afterwards the pool became alive with the reptiles, and the otter was quickly pulled down. While in full possession of its strength the crocodiles evidently deemed the time spent in attempting to catch it wasted.

When at bay the Cape otter utters a throaty "kwa-a-a, kwa-a-a."

The Spotted-Necked Otter (*lutra maculicollis*).—This is a smaller animal than the Cape otter. The throat is spotted with buff, and the fore and hind feet are each provided with five well-developed claws, besides being fully webbed.

This otter does not seem to be met with south of Natal. It does

not occur in the eastern Transvaal, though it exists in the western part of that province. It is very common on many of the rivers of northern Rhodesia.

The Ratel or Honey-Badger (*mellivora ratel*).—This animal, akin to, and about the size of, a true badger, is remarkable in several ways, and excites my own admiration and respect to a higher degree than any other beast which roams the African jungle. Its external characteristics are as distinctive as are its habits and disposition. While the limbs, face, and under parts are quite black, above, from forehead to base of the short tail, the colour is grey, divided from the black by a white lateral stripe. In immature animals the upper parts are rusty brown, and the dividing stripe is absent. There is no external ear. The fore claws are very long and powerful, and the skin is so extraordinarily tough and loose that it is impervious alike to the teeth of the largest dog, and the fangs of the most venomous snake.

The ratel is found through most of the Ethiopian region, and is possibly less rare than it is generally considered to be. It lives in forest, or bush country, and at all levels, both in flat and hilly surroundings. It is partly diurnal by habit, but, being a solitary creature, of comparatively small size, and seldom having business in open country, it is not often met with. It lies up in holes in the ground and among the roots of large trees. So far as I know, it is not a climber, except possibly to the extent of scrambling up sloping trunks.

Its diet covers a fairly wide field. There is no doubt that it is occasionally a carrion eater, for it comes, now and then, to traps baited for the ordinary bush scavengers. When caught it struggles for release with the quiet but dogged persistence so characteristic of its nature, and, thanks to its loose and impenetrable skin and considerable bodily strength, usually attains freedom. It is said to be a deadly foe to snakes of all kinds. Their fangs can seldom penetrate the leathern armour which completely encases it; nor, having regard to the easy fit of this covering, is it likely that even its perforation would be attended by any after ill-effects. Locusts, ants, beetles, and other insects also figure prominently in the animal's bill of fare, but its favourite food is certainly the honey and grubs of the wild bees, the comb containing which it tears from the nest with its powerful claws, entirely oblivious of the attacks of the infuriated insects.

A very interesting phenomenon in wild life is the alliance which

apparently exists between the birds known as "honey-guides" and the ratel. You may be resting in the bush in the cool of the afternoon, or on some cloudy day, when your attention is arrested by the persistent and approaching chatter of one of these feathered spies. Presently the bird itself comes fluttering on to a branch some thirty yards distant, where it perches, flapping its wings, and displaying every sign of impatience. For a moment it is silent, and then a less familiar sound strikes the ear: a light sibilant hissing and chuckling, which at first you find yourself unable to identify: "Kru-tshee, kru-tshee-clk, clk, clk, whee-tshee-tse, tse-whi-o-o" (it is almost impossible to do it justice on paper). The honey-guide understands, and having, with undulating flight, sought another tree some thirty yards further on, renews his invitation. Keeping quite still, and looking steadily, you presently spy a little grey and black form, moving along at a steady jog-trot; the tail is carried slightly above the level of the back, and the head, except when raised to glance up at the guide, is held a little low. Every time the bird utters his monotonous refrain, which, translated into feathered language, means "Come along, come along, don't be so slow," the follower replies, "All right, my friend, don't be alarmed, I am coming." And thus the strange procession passes on out of sight to the hollow log, where the unlucky insects are industriously slaving, only ultimately to satisfy the appetites of bird and beast. When following the honey-guide, the natives of many tribes in Africa endeavour to imitate the curious whistling and chuckling sounds of the ratel; though indeed the bird appears to require but little encouragement to keep it to its work.

I do not believe that there exists in the world a more absolutely courageous animal than the ratel. He seems to fear nothing that runs, or flies or crawls. His whole demeanour, as, sometimes at a walk, sometimes at a jog-trot, he makes his way towards some definite point, is full of the confident assurance of one, who alike fears nothing and threatens nobody; and it contrasts as vividly with the scared, abrupt motions of the antelopes, as it does with the furtive movements of the beasts of prey. Perfectly inoffensive to human beings so long as not interfered with, when wounded, or driven into a corner, there is no creature alive capable of making a more gallant fight, or one, which, for its size, is more difficult to dispose of. At bay, it utters a sound between a growl and a hiss, and makes straight for the most formidable of its enemies. I have known cases, when, after a protracted struggle with a pack of dogs, the ratel has

picked himself up and jogged off, apparently little the worse from the encounter, leaving the assailants totally exhausted, and all more or less damaged. When the ratel has been eventually shot after a severe worrying, the skin has invariably been found entirely free from any teeth punctures, although there has existed considerable internal bruising. Major Fraser, writing of such an incident, says: "The dogs got to grips with a honey-badger, and had one of the biggest worries I ever saw. The badger was fairly smothered in dogs, and he punished every one of them well. They were covered with blood, and clean off their heads. They paid no attention to me calling them off, and, every time I went near, the badger broke away from the dogs and came for my legs. I had to shoot him in the end; but although I had broken his shoulder, he still continued to come straight at me. Pluck was not the word for it." On another occasion the same gentleman took a snap-shot at some small animal which he saw moving through the bush close to the path. The next instant, quite slowly and deliberately, there emerged a ratel, which, getting a good grip of the calf of his leg, held on like a bulldog until it was killed. A patrolling ranger once came to a spot where a lion had tackled a ratel, and had only succeeded in killing the game little beast after a severe struggle, of which the trampled bush and grass supplied a faithful record. After his victory Master Leo apparently found small relish in the meat, for he had eaten only very little of it and then passed on to kill a steenbuck at no great distance away. It is only fair to say that all available evidence pointed to this being a very old lion.

Here, however, is another side to the beast's character.

Ranger Duke reported under date 31st March, 1908, "A wildebeest bull was found dead on the north bank of the Sabi River. On examining the carcase I found it perfectly free from wounds, except that the scrotum was torn, and the animal partially emasculated. The lower intestines and bladder were full of blood, and the bull had evidently bled to death. We followed the spoor back for a considerable distance, and found signs of a prolonged struggle, the tracks of a honey-badger being mixed with those of the wildebeest." On two other occasions, since I have been in charge of the Transvaal Game Reserves, other rangers have reported such attacks occurring—once on a waterbuck bull, and once on another male wildebeest; on each occasion the antelope was done to death. Natives state that the ratel always seizes and holds on tenaciously to the scrotum if it can, whatever the animal may be. Its motive *may*, in such circumstances

(I am not at all certain about it), be only resentment of some interference or accidental injury; except for its passing fancy for carrion, it is not a meat eater in the ordinary acceptation of the term, and in none of the cases quoted was there any indication of its having touched its adversary after death. On the other hand, it may conceivably have sucked the blood, and we have occasionally found half-digested blood in the stomachs of dead ratels.

In captivity the honey-badger becomes extremely tame and gentle, and is a most amusing companion. It displays an intense yearning for sugar, treacle, and, in fact, any other sweet things, which must therefore be carefully put out of its reach, with a mental note that it displays great ingenuity in prising open the doors of cupboards and presses in its search for delicacies. Where closely confined it has an amusing way of passing the time by turning somersaults.[1]

On the whole, the ratel deserves well of man, and should therefore not be wantonly destroyed; but any one who would release this creature when caught in a trap, must be prepared for all kinds of eventualities.

Polecats.—There are two genera of polecats, or skunks, in south Africa, each containing but one species. The first, *ictonyx capensis* (*zorilla striata* of Schlater), known as the striped muishond, attains an average total length of about twenty inches, eight of which is taken up by the rather bushy tail. It is a handsome little animal, jet black in colour, having four white stripes from between the ears to the root of the tail, and three white spots on the forehead and temples. It is distributed throughout central and south Africa. It is solitary in habit, and feeds on rats, mice, and such small mammals, birds, frogs, lizards, snakes, and eggs of all kinds, besides locusts and other insects. When in danger it has the power of emitting from its glands a very strong and tenacious odour. It often shams dead when attacked by a dog. Though, generally speaking, nocturnal, I have sometimes seen these little animals come out of their holes in daylight. The tail is carried more or less perpendicularly while moving, and when the owner is irritated the hairs on it are spread out, and bristle stiffly. The striped muishond has the same method of springing sharply from all four feet, and in any direction, so characteristic of the mungooses. When caught young it becomes very tame, and makes an interesting pet. About three young ones are born at a time.

The Snake Muishond (*pœcilogale albinucha*).—This species, though

[1] It must be supplied with plenty of water to drink and bathe in.

much smaller, is very similar in its bodily markings to the last, but the whole top of the head is yellowish white. In general shape and size it is weasel-like, and apparently in food and habits somewhat resembles that animal.

With the exception of one member of the *otariidæ*, the Cape sea-lion (*arctocephalus pusillus*), found on the islands off the coast of south Africa, and the protection of which from extermination demands constant attention, the above completes the list of families of the carnivorous order found in Africa. The continent contains a vast host of squirrels, rats, mice, shrews, bats, and other very interesting mammals, upon the correct classification of which naturalists are now busy, but from which it will be sufficient to select, for present purposes, a few miscellaneous types which are most likely to be of interest to the traveller or hunter.

Order Rodentia

The only group of this Order which is included under the heading "game" are the hares (*leporidæ*), of which about seven species are generally recognised.

The Cape Hare (*lepus capensis*) is distributed over most of Africa south of the Equator, in several local races. In size it is about midway between a rabbit and a European hare, and in colour is speckled brown and black above, reddish white below. Tips of ears black, tail black above and white beneath. It is found both in open and in forest country. Though it does not excavate burrows for itself, it will often go to ground when pursued, a rabbit-like characteristic without which it would find existence very difficult, since it forms the prey of almost every kind of carnivorous beast and bird. By habit it is rather inclined to be a scavenger, and often comes at night to pick up refuse round native villages. I have found young ones hidden in "forms" in the long grass, and have never noticed more than a single one in the same spot. In the eastern Transvaal they appear to be born through the wet season. These hares seldom live long in captivity.

The Rock Hare (*lepus saxatilis*) is a larger animal than the above, but is smaller than the English species. Its colour above is similar to that of the Cape hare, but it lacks the rufous tinge of that animal on the under parts, which are yellowish white. The ears are very long, and have black margins to the tips. There is a reddish patch at the back of the neck. The tail is similar to that of *l. capensis*. This hare is found in hilly country southwards from the Zambezi.

The Red Hare (*pronolagus crassicaudatus*) has only recently acquired the dignity of a separate genus. The upper parts are speckled black and brown, and the underneath portions are rufous white. The limbs are rather shorter than those of the last genus, and the tail is rufous both above and below. The red hare is fond of elevated and hilly country, and is distributed through most of the Ethiopian region in several sub-species.

The Cane Rat (*thryonomys swinderianus*).—The cane rat belongs to the same division of the animal kingdom as the porcupine, and is found throughout most of Africa south of the Sahara. It attains a total length of about thirty inches, and is stoutly built, averaging about twelve pounds in weight when full grown, and sometimes scales a couple of pounds in excess of this. It is entirely destitute of fur, instead being covered with coarse bristles of a generally light brown colour, yellow at the bases, and turning to black at the tips; on the chin they are whitish. These bristles come off very easily, and in fact the nature of the skin is very remarkable; it is thick, but at the same time soft, and lacking in elasticity, so that great care must be exercised in sewing up specimens. The ears are rounded and very short; the tail is rat-like and measures a good deal less than the head and body; the legs are short.

The cane rat haunts the reed beds which border so many African rivers, lakes, and pools, lying close in their shelter by day, and by night feeding on their young shoots, as well as on the roots and leaves of water-plants. It is a pest to any gardens which may be planted near by, as it cuts right through the stalks of the maize and millet with its sharp teeth. It is a strong swimmer, and almost invariably takes to the water when pursued. Cane rat hunting with dogs affords quite good sport, and is largely indulged in by the natives of the Transvaal low country, who are very fond of the meat. The latter is very tender and good, and no one need have the least hesitation in partaking of it, for this animal is a purely vegetable feeder, and the term "rat" is entirely a misnomer. Though rather solitary in habit, amid suitable environment, the cane rat exists in great numbers, and at Sabi Bridge has always formed a never-failing stand-by for the feeding of captive carnivorous animals. From two to four young ones are born at a time, and are produced, for the most part, during the spring and early summer. The Amatshangana have a curious superstition concerning the tail, which must be cut off and thrown away before the village is reached, for a married woman must on no account be permitted to behold it.

The Common Porcupine (*hystrix africæ-australis*).—This porcupine is spread over the greater part of the Ethiopian region, and is found in almost every description of country, whether flat or hilly, open or forested. It is strictly nocturnal and solitary in habit, spending the day underground in burrows and holes, whence it comes forth at night to seek its food in the shape of roots and fruits. It is a serious foe to cultivation, having a well-developed taste for grain of all kinds, as well as for pumpkins, cultivated roots and bulbs.

It moves at a shuffling walk or trot, with much rattling of the loose quills of the tail. Deficient in speed, it relies for protection upon its sharp quills, which, when the animal is angry or frightened, are raised on end, thus presenting a bristling *chevaux-de-frise* to its enemies. The spines of the tail are detachable at will, and, when attacked, the porcupine, endeavouring to keep his back turned to the foe, swings this appendage in such a manner that its loosened quills are left sticking deep in the adversary's flesh. Should the eyes, nose, feet or tongue be pierced by these needle-like weapons, the results to the aggressor, whether lion, leopard, or caracal, may be very serious, and sometimes permanently crippling.

The period of gestation is from six to eight weeks, and the young, born from one to three in a litter, and during the summer months, display on their backs, after about three days, a few white bristles, heralds of the future quills. The little ones remain in the hole which has witnessed their birth until their natural defences have grown and hardened, after which they accompany their mother on her nightly expeditions, until big enough to look after themselves.

The flesh when cooked resembles mutton in colour, and that of females and young animals is quite good eating; old males are very tough and gristly.

The Spring Hare (*pedetes caffer*).—Akin to to the true jerboas, this remarkable creature is found locally through Africa south of the Equator. The head and body measure about two feet, and the tail is long. It derives its colloquial designation from its kangaroo-like method of progression. It is an expert burrower, is nocturnal, and lives in colonies in large and complicated warrens. The flesh is good eating.

Order Edentata

The Pangolin and the Ant-Bear belong to the order *edentata*, and are the only African survivors of what, at an earlier epoch of the earth's history, was doubtless a very large group. Teeth are entirely

absent from the pangolin, while in the ant-bear they are present only in the cheeks, and are different in formation and character from those of any other mammals, being composed of closely-packed columns of dentine, devoid of enamel.

The Pangolin, or Scaly Ant-Eater (*manis temmincki*).—This is an armadillo-like creature, covered, except underneath the body and on the insides of the limbs, with broad, overlapping and horny scales of a dark brown colour. The head is reptilian, the limbs are short, and the feet furnished with long and powerful claws. The tail is long and broad, being, like the body, covered with scales. When full grown, the animal averages about forty inches in length, over all, and appears to be found through tropical Africa to about the latitude of the Orange River.

It lives in both forest and open country, is solitary and quite nocturnal, and spends the day underground in burrows of its own manufacture. Its food consists of ants and termites, which it captures by breaking into their nests and licking them up with its long tongue. It has no means of defence, except to roll itself up in a ball within its armour.

The Ant-Bear (*orycteropus afer*).—The newcomer in the African veld soon finds his attention attracted and his curiosity excited by the number of yawning tunnels and holes, which, in many districts, are to be seen everywhere dotting the ground. Sometimes they appear singly, while at others an area is literally honeycombed with them. Partially or entirely hidden in long grass, as they often are, they form a constant danger to horsemen, and riding at speed, especially in a close country, necessitates the utmost vigilance upon the part of both horse and rider. Although African-bred ponies are marvellously quick at avoiding, and even apparently guessing the presence of these pitfalls, nevertheless many very bad falls are sustained by hunters and others, even when thus mounted, while the use of a foreign-bred animal implies early disaster. These holes are, as a rule, the work of the animal colloquially known as the "ant-bear," a creature now confined entirely to Africa, though fossil remains indicate that its range was once a wider one.

The ant-bear is about the size of a half-grown pig, which it rather resembles in its thick skin, destitute of all fur, and covered with scanty reddish brown hairs. The tail and ears are long, the former tapering from the root, where it seems merely a prolongation of the body, to a thin tip. The muzzle is long and narrow, terminated by a small pig-like snout; the tongue is extensile and sticky. The

Cape Otter.

Mr. Haagner with Ant-Bear.

imbs are stout, and are furnished, especially in front, with powerful digging claws.

The ant-bear exists practically wherever there are white ants, and s not in the least a rare animal, though, in consequence of being one of the most strictly nocturnal in habit of all mammals, and spending he whole day underground, it is very rarely seen. Its hearing is very acute, and sight and smell seem both well developed. When sitting up for carnivora on moonlight nights, I have once or twice seen these creatures above ground ; and there is no doubt that they vander considerable distances during the hours of darkness, for their racks are constantly seen in sand-spruits and elsewhere. At such imes it seems almost certain that individuals must occasionally fall victims to the various predatory beasts which are then abroad, but I cannot recall ever having come across the remains of one so killed. I found a male, however, killed by a ratel, which had attacked it in he usual manner, and am rather inclined to believe, from what I saw, had *eaten* the parts which it always attacks. When disturbed they at once make for the nearest hole, and in soft earth can burrow so ast that they make more progress than several men digging hard. Their capture, therefore, is a matter of considerable difficulty. An ant-bear once fell into a covered pit which had been dug for the capturing alive of game. I have no idea how long he had been there when the natives arrived in the morning; in any case he had not made much impression on the walls of the trap, which had been hollowed out of very hard and rocky soil.

The ant-bear's food consists exclusively of ants and termites. Its method of procedure is to break into one or other of the big or little ant-hills which so widely decorate the African landscape, and, having sufficiently disturbed the inmates, to introduce its long and sensitive tongue along one of the numerous thoroughfares which permeate the nest. So soon as this sticky member is sufficiently covered with the alarmed termites, it is withdrawn into the mouth, to be extended once more for a fresh supply, until hunger is satisfied.

It is a perfectly inoffensive, and, if its excavating tendencies are excepted, harmless animal; indeed such inconvenience as it causes in this way may be held to be more than counterbalanced by the heavy toll which it takes of those pests of Africa, the white ants.

An ant-bear killed in the Singwitsi district, was found to be suffering from a disease akin to measles, the lungs, liver, and loins being covered with spots. In spite of this some of the natives ate the flesh with relish, and suffered no apparent after ill-effects. These animals

are usually very fat, and the meat is considered to be quite good. I captivity they become very tame, although, during the daylig hours they suffer from unconquerable sleepiness, and protest in determined, if passive manner, against any attempt to disturb them They show considerable intelligence, and, at what they deem reasonable hour, will play amusingly with any one whom they know In captivity they will eat porridge and milk, raw eggs, and raw mea chopped up into very minute fragments.

Several varieties of the animal have been described from differen parts of Africa.

The Hyraxes, or Dassies (genus *procavia*) form a sub-order HYRA COIDEA by themselves, and, although externally resembling rodents are classed as a branch of the ungulates. They are small animals brown, and not much bigger than guinea-pigs—which they rathe resemble in shape—have microscopic tails, and possess three well developed toes on each foot, each covered by a flat nail, except th second toe of each hind foot, which is clawed. Their ears are shor and round, and their faces rather pointed. A number of species extending over the greater part of Africa, are known. Some ar arboreal, and others terrestrial ; of the latter, the so-called " Roc Rabbit," is the best known in south Africa. They are vegetabl feeders, and are said to be good eating. The forests of east Afric at 7,000 feet and over, are full of " Tree Dassies " and at nigh their squalling cries ring all round the camp.

In captivity they become very tame, and are quite intelligent.

ORDER PRIMATES

This order is divided into two groups, the first of which includes in Africa, the apes, monkeys and baboons, while the secon contains the much less intelligent and less specialised lemurs. All th African members of the order are arboreal in habit, and therefor are found only in more or less forested country. Their food i composed of roots, fruits, and herbs of various kinds, while a grea many species are also insectivorous. Their eyesight and hearing ar acute, but the faculty of scent is little, if at all, superior to that o human beings, and they do not rely upon it to warn them o approaching danger.

The *simiidæ* or apes, in their intelligence, size, and certain physica characteristics, including lack of caudal appendage, approach mor nearly to man than any other of the lower animals. Of the family

the chimpanzees (*anthropithecus*), display the most striking human resemblances in the conformation of their skulls and jaws, the number of their vertebræ, and in their mental powers. These apes are found in the forest regions of equatorial west and central Africa, where they consort in small family parties.

The Gorilla (*gorilla savagei*) is the largest of the group, the male standing sometimes over six feet in height. Its range extends only through a limited portion of the forest zone of west equatorial Africa.

Both the above species are able to walk in a more or less upright position.

The family of the *cercopithicidæ* contains the monkeys and baboons, and in Africa, south of the Sahara, is made up of the guerezas (genus *colobus*), the guenons (genus *cercopithecus*), the mangabeys (genus *cercocebus*), the gelada baboons (genus *theropithecus*) and the dog-faced baboons (genus *papio*).

Of the guerezas, of which about a dozen species are spread across tropical Africa, the best known is the beautiful white-tailed guereza (*colobus caudatus*), which is found at high elevations in the forests of east central and east Africa. It is clothed in a mantle of long, silky white hair, which falls upon either side of its body, and contrasts with the centre of the back and the head, which, except for a white ring round the face, are glossy black. The tail is long, bushy, and pure white. In former days, the skins were favourite adornments of native warriors, and latterly have been so much sought after by Europeans that the species is now protected under the game regulations in British territory.

Another type, known as *colobus guereza*, which has the distal third only of the tail, white and bushy, and the rest black and short haired, exists at lower elevations.

The white-tailed guereza is found among the tops of the tallest trees, preferably of those growing on the sides of ravines and water-courses. It is useless to seek it amongst the scrub and bush in the neighbourhood of villages, for, being of all monkeys perhaps the most timid and retiring, it keeps far away from the habitations of man. It is entirely arboreal in its habits, and is seldom, if ever, seen on the ground. To find it in its native haunts in east Africa, the steps must be directed to the heart of one of the great upland forests, where also dwell the bongo and the giant hog.

Leaving our camp at dawn, we breast a steep ascent of maybe a thousand feet, and, the open or lightly-bushed country spread like a

map at our feet, find ourselves on the highest terrace of the table-land, the region of undisturbed primeval forest.

Guided by one of the local Wanderobo, we now plunge into a sea of tangled undergrowth; great creepers catch across our chests and faces; the light shines dimly through the high overhead canopy of leaves. We cross watercourses, and plunge through half concealed morasses; sometimes we are descending the sides of almost precipitous ravines; at others we are scrambling upwards on hands and knees. Our eyes are kept constantly employed scanning the branches aloft, but for a long time our search goes unrewarded. Presently something white and gleaming seems to fall vertically from a bough, and there is a rustle and slight crashing of branches. The flying shape is, in a moment, lost to sight; but another and another follow, and we can see the branches of the surrounding trees violently agitated. It is a troop of colobus monkeys; but the eye can scarcely follow their swift movements, and their black and white markings so harmonise with the background of leaves and branches that it is very difficult to distinguish them when at rest. We follow on, and, when we have once more got within thirty or forty yards, the troop, which has been carefully watching our every movement, once more dashes off through the tops of the trees. There are probably not more than a dozen at most associated in one body, but here and there we may notice a single old male, swinging easily from branch to branch, obtaining a purchase from the smallest twigs, and rustling swiftly through the leaves, as he drops out of sight on the other side of a yawning ravine, which it will take us earth-bound folk a good half hour to cross.

Innocent of all predatory tendencies as regards crops and gardens, the colobus finds his sole food among the leaves and fruits of the forest trees which form his home. He is gentle and inoffensive in disposition; but, tame though he becomes in captivity, he soon pines away and dies, possibly from want of his natural food, which is much more restricted in its character than that of most other genera of monkeys. Indeed, as regards the capture and domestication of all kinds of wild animals, it would save much useless labour and subsequent disappointment if those meditating doing so were always to make some study of natural diets. Probably more loss of life occurs in confinement through unnatural feeding than from any other cause.

The young are brought forth singly, and, in east Africa, I noticed little ones about six weeks old in October.

The Guenon Monkeys, which, in Africa, are by far the most

numerous genus of the family, and contain over forty species, are spread practically all over the continent south of the Sahara. Their food is of a varied character, and, accordingly, they thrive well in captivity. They display no undue fear of man, and many species are most destructive to grain and fruit. Though trees are used for rest and refuge, they spend much of their time on the ground searching for food, and are not confined to the neighbourhood of tall forest, or even dense bush. They are noisy, and in their movements quick and restless, in such respects contrasting with the guerezas.

The vervet (*cercopithecus pygerythrus*) is the best known of the genus south of the Zambezi. Until recently it was divided into two species—*c. pygerythrus* and *c. lalandii*—which are now believed to be identical. It is distributed throughout the bush country of the eastern Transvaal, and becomes very numerous in Portuguese territory south of Delagoa Bay, whence it spreads into Zululand, Natal, and Cape Colony. Northwards, it extends up the east side of Africa.

In colour it is grizzled grey, with a tinge of yellow, and is yellowish white underneath. The face is black, and there are rufous patches at the base of the tail; while in the male the scrotum is of a bright blue colour.

Vervets inhabit forest and bush country, and are usually found fairly close to water. In the dry, low country of the eastern Transvaal solitary individuals and pairs, or small family parties, are most usually met with; but a little farther south, on the Maputa River of Portuguese East Africa, I have come across troops composed of at least forty individuals. These monkeys eat fruit and seeds, and are very fond of eggs; they also seem partial to the gum which oozes from the bark of some of the acacias. They are particularly fond of millet, and when the crops are ripening may be found collected in considerable numbers in the neighbourhood of the native lands. When surprised on the ground at a distance from covert they can easily be caught by dogs. By night they roost in trees, usually at a fair distance from the ground.

In captivity the vervet is at first very timid and suspicious, which may partly account for its reputation for being treacherous. I have kept a good many captive vervets, and have found that when once their confidence has been gained they are most gentle and tractable with people they know.

The intelligence of the vervet cannot be compared with that of the baboons; still, we had a female for a long time at Sabi Bridge which developed what appeared to be almost a sense of humour. As, seated

on her perch, she ate her evening meal, fragments of the feast would accidentally fall to the ground and be ravenously competed for by the fowls, which, some of them, got into the habit of regularly collecting at the spot about the same hour. After a while, the monkey, having eaten her fill, and filled her cheek pouches, began to deliberately drop scraps of porridge one at a time into the crowd. She did this quite slowly and reflectively, and seemed to derive real amusement from the contests which she created. The same monkey struck up a close friendship with a pig, and the two would spend hours together. In the eastern Transvaal the young seem to be born at irregular times during the warm season, and arrive singly.

The Samango Monkey (*cercopithecus labiatus*).—This species is darker in colour than the vervet, and there are no rufous patches behind. The fur is very silky and handsome. It extends from the eastern part of Cape Colony, through Portuguese East Africa, and the whole of Rhodesia. Its northern limit is at present undefined, but it probably extends at least as far as the Rovuma. It is found, as a rule, in thick forests, and in the dense bush which clothes the sides of ravines and watercourses.

Sykes' Monkey (*cercopithecus albogularis*).—This very handsome monkey is an inhabitant of east and south-east Africa, but is seldom found south of the Zambezi. The fur is long and thick, olive coloured on the head and shoulders, and becoming mixed black and golden-red towards the tail. I have met with it in east Africa amongst the bush on the outskirts of the main forest.

The Chacma Baboon (*papio porcarius*).—This is the well-known baboon of south Africa. Its range extends from the Cape to about the latitude of the Zambezi, where its place is taken by an allied species. The chacma varies in colour from dark brown to olive, and a perceptible greyish tinge appears in old animals.

Colour seems to be uniform in the same troop, but different troops, even within the same area, appear to vary one from the other. Thus, while in the Sabi the majority of the baboons display a distinct shade of olive green in their coats, some more and some less, I have seen troops the members of which were of a uniform dark brown colour, with little, if any, tinge of yellow or olive. Specimens shot and carefully compared leave little doubt that this is the case. Females and young animals are lighter in colour than adult males. Baboons from the Transvaal appear, generally speaking, to be a little shorter in the leg than those from the Cape Colony.

The chacma inhabits both forest and open country, but is

seldom encountered many miles away from the rocky krantzes and boulder-strewn kopjes which are so prominent features of many parts of south Africa, and to which the animals always betake themselves at night. The thickly-bushed low country of the eastern Transvaal is dotted here and there with solitary outcrops of granite, which rise, in tumbled masses, often considerable heights above the surrounding country. The larger among these are generally each the special refuge of some particular troop, which may total anything from fifty to a hundred in number.

Like all the primates, baboons are diurnal in habit, and at early dawn issue from their fastnesses in search of food. About sunset they return, each troop to its special sanctuary, to spend the night huddled up for warmth and protection among the boulders, or in fissures of the rock. During their daily rambles the most methodical and ordered combination is displayed. The troop spreads out in a sort of open order and moves across country, each individual at a sedate walk, his tail, except the distal third, which laps over, held erect. Every inch of ground is deliberately scanned, every likely stone and tuft of grass turned over or displaced in the search for scorpions, centipedes, beetles, ants, birds' or other eggs, bees' nests, ground nuts, bulbs, and all the other items of the baboon's extensive diet. Wild fruit trees are stripped clean of their burdens, and woe betide the unguarded fields of ripe mealies, millet, or ground nuts, which happen to lie in the path. When employed in a raid on cultivated lands, baboons seem perfectly aware that they are behaving improperly, and that detection means danger. Therefore, upon such occasions, it is their custom to post one or more look-outs, either in high trees or on the top of some commanding rock, in order that they may receive due notice of approaching interference. When actually disturbed, though discretion prompts swift and instant flight, their fear is seldom sufficiently great altogether to blunt their sense of acquisitiveness; and I have seen a troop retreat at full speed, each member carrying one or two mealie cobs in hand or armpit, while the cheek pouches were, no doubt, also crammed full of loot. Although intensely destructive, the baboon nevertheless has more on the credit side of his ledger than is generally recognised. Locusts in the hopping stage have no more formidable enemies, and possibly they do more good in this respect than any other kind of bird or beast. Scorpions and other disagreeable insects also pay a heavy toll, and the baboon's method of dealing with the former is interesting. When the removal of a stone has disclosed the presence

underneath of one of these creatures, the baboon pounces on it, and, with lightning-like rapidity, tears off the sting which adorns the end of the tail. Having thus rendered his prey harmless, he loses no time in tearing it to pieces and masticating it. Although the juveniles probably soon learn this trick, it is clearly a lesson learned by imitation, for an animal captured in very early infancy refused firmly to have anything to do with scorpions. It showed, however, the most intense fear of even a dead snake, so this feeling must either be innate or must be inculcated by the mother at a very early age.

When encountered in the forest baboons show themselves very alert and wary, making off at the first alarm; but, perched among their rocks, in places where they have been unaccustomed to much persecution at the hands of man, they are far bolder, evidently deeming themselves secure from molestation.

The baboon is possessed of remarkable intelligence, which he displays alike in a wild state and in captivity. It is most interesting and instructive to watch, from some concealed position, the social life of a troop which fancies itself to be unobserved. Perched about at intervals among the rocks are some of the older males, evidently on the look-out for danger. Behind these walks and squats a heterogeneous mass of females and of young animals, the ladies employed in various family tasks, while the boys and girls, playing and squabbling, chase each other around, to a shrill accompaniment of chattering screams. Possibly two of the youngsters, in the course of a rough and tumble, jostle against one of the senior males. Immediately the latter's attitude of dignified quiescence vanishes, and he turns with a roar upon the imprudent juveniles, who retreat hastily with shrieks of pain and fear. Now and then a mother finds it necessary to chastise her offspring, or to wreak vengeance upon one or other of the unattached hobbledehoys who, she guesses, meditates imposing upon or injuring it. The air resounds with squeaks, shrill cries, and occasional bass grunts. Suddenly from one of the guards comes a single deep, hoarse bark, and instantly there is silence: the females catch up their young offspring; the rest of the band, by one accord, scuttle out right and left, and in a moment nothing remains to indicate their former presence but one or two of the largest males, who walk quietly off, now and then stopping to glance back and to utter their resonant warning barks. If you run quickly forward, and climb to a coign of vantage, you will perhaps be in time to see the whole band scampering off, the infants clinging to their mothers' backs, the

South African Baboon (*Papio porcarius*).

East African Baboon (*Papio cynocephalus*).

unattached juveniles racing ahead, and the three or four fathers of families bringing up the rear at a more deliberate pace.

The cunning of the baboon has, however, apparently, limits, as the occasional success of one of the methods in vogue for catching them alive proves. The mode of operation is to put a few mealies, or some other delicacy, inside an ordinary gourd, leaving an aperture only just sufficiently large to admit the open hand of the animal. The first party that comes along are not a great while before they discover the hidden treasure; some of the smaller ones are probably wrangling round it, when a big male stalks up, drives them away, and begins to examine the gourd on his own account. After turning it round and round, and inspecting it from all sides, he at last squeezes his hand into the hole, and grasps the prize. Presently, to his annoyance, he finds that, though he could put his hand in with a struggle, it is quite impossible to withdraw it, clenched, and holding the mealies. He gets angry and struggles furiously, but ineffectually, until the watchers arrive on the scene and, encumbered as he is, make him an easy prisoner. It never once seems to occur to him to open his hand and let the mealies go, but, growling and roaring with rage and fear, he grips them until the very last.

A young male, in captivity for a long time at Sabi Bridge, often showed intelligence almost human. For instance, he was accustomed to roost at night in a tree situated at about thirty paces from the native cook-house, wherein he liked to sit, sharing the evening meal of the "boys," until just after sundown, when he would retire to his perch. Sometimes the food would be a little late, and on going out "Jack" would find himself benighted. Nothing would then induce him to cross, alone, the open space separating hut and tree, and he would sit screaming until someone lifted him up and carried him across the danger zone. Arrived at the foot of the tree, he would make all haste to the shelter of the branches, evidently deeming the ground no place for him at that hour. One day a very small captive of his own species was brought in, and the two were placed on the ground facing each other. At first "Jack" displayed the utmost self-consciousness, half turning away, and ostentatiously affecting to be employed displacing stones; presently he began to sidle up, and, mutual confidence being presently established, the two became quite inseparable. "Jack" was never contented unless he was carrying his small friend hugged closely in his arms, and, from having in the past constantly sought human companionship, he now rather avoided it, and resented strongly anyone attempting

to so much as touch his charge. It was quite a pretty idyll, and its curtailment, through "Jack" accidently hanging himself in the course of a burglary on the mealie store, was widely regretted.

Another little fellow, having developed a considerable liking for me, used to like sitting on my shoulder, and if at such a time any of the dogs came up and tried to demonstrate their affection, he would fly into a rage, jump down and chase them away, perhaps under the impression that they were trying to attack me. On all other occasions he was on the most amicable terms with them all. During my absence someone bullied him, and, finding himself uncomfortable, he ran away into the bush, and could never be caught nor induced to return to civilisation. He never attached himself to any others of his own species, but taking up his abode somewhere in the vicinity of a small village, he periodically raided it for food, having first assured himself that no one was at home. He then showed the results of his period of domestication in the deftness with which he would prise open the reed screens closing the huts, remove covers from dishes, and so forth. When a white man was walking or riding along the road he would sometimes appear from the bush and follow a hundred yards or so behind, but the moment the person faced round he would disappear.

Another baboon, confined with a vervet monkey, made it his business to render the existence of that unhappy creature a burden to it. He would steal its food, pull its tail, jump on it when it was not looking, and eventually so shattered its nerves that the two had to be separated. Although the two animals were, at that time, nearly of a size, the vervet always seemed to admit the moral superiority of the baboon.

Although dogs are generally perfectly friendly with, and, in fact, often allow themselves to be bullied by tame baboons which they know, they seem to have a strong antipathy to these animals in a wild state. The most obedient dogs are with difficulty restrained from chasing a troop, often with the most disastrous results to themselves; for the rearguard of big male baboons, combining against their pursuers, and fending them off with arms and legs, while their huge sharp canines inflict terrible gashes, can hold their own against anything like equal numbers of even quite large dogs. In single combat, a big plucky dog will generally dispose of a full-grown male baboon, provided that he can secure a good hold, and that the enemy's teeth do not reach the jugular, or other vital spot. A baboon, when fighting, always bites and lets go at once, which places him occasionally

at a disadvantage. I suppose that, in the Sabi, we have lost more good dogs through these animals than by any other kind of natural enemy, except crocodiles and snakes. Years ago, on the Zambezi, I was the owner of a very large boarhound, which killed a great many "old men" baboons; but he often returned from his encounters a good deal the worse for wear. Ranger Healy had a very fine bull terrier, which, having attacked a troop single handed, was literally torn to pieces by a combination of three or four old males. He had evidently, following his natural instinct, held fast to the one which was found lying dead beside him, while its companions attacked him from behind.

The full-grown male chacma being a most powerful, fierce, and plucky beast, which fights desperately in defence of its females and young, it is perhaps inevitable that its aggressive qualities should be sometimes exaggerated. Native tradition and "hunters' yarns" have, therefore, no doubt been responsible for many of current accounts of unprovoked ferocity towards human beings. Nevertheless there is no reason to doubt that, especially where they have not learned to dread firearms, they would be capable of combining with effect against an unarmed native who attempted to interfere with one of them. Again, during their forays on native gardens, it is quite conceivable that a number of half-hearted attempts to drive them away, on the part of women and children, followed by precipitate flight, might ultimately induce pursuit and vengeance. The freakishness of all wild animals is proverbial. Still, I think the attendant circumstances must be in some way exceptional, and in the countries in which I have lived and travelled I have never actually come across an instance of the kind. In general practice, baboons, no less than other wild things, habitually give way before man, and, not being flesh eaters,[1] they have seldom any natural inducement to make attacks upon other mammals. An exception is the habit which they have acquired, since the opening up of some parts of south Africa, of attacking parturient and newly-delivered ewes, and the young lambs of domestic sheep, in order to obtain the milk from the udders and stomachs respectively.[2] A troop of baboons, drinking in company with, or, in perfect mutual amity, strolling about near a

[1] Although in captivity individuals will occasionally accept a small piece of raw meat, this cannot be regarded as a normal taste of the species.

[2] I have been told of a troop killing a half-grown klipspringer; they were said to have put out its eyes and torn it badly. I cannot personally vouch for the facts as narrated, and if correct they illustrate quite an exceptional tendency.

herd of impala or other antelope, is however a far from uncommon sight, and this would never occur did the latter apprehend any danger to themselves or offspring. Probably, in any attacks which may have been made on human beings, fear, and the anger born of fear, were the factors at work, for baboons will often combine to try and scare or drive off any creature which threatens or injures one of the community. The attitude which they adopt against a leopard is well illustrated in Sir Percy Fitzpatrick's "Jock of the Bushveld," and is no doubt typical of that usually assumed when their enemy is one which they have good reason to dread. Not long ago a leopard was found by the carcase of a dead baboon. It charged the ranger at sight, and was afterwards discovered to have been so desperately wounded by baboons' teeth—the loins being torn open and the intestines protruding—that it must soon have died. It had been much too sick to touch the dead baboon.

I once surprised a large troop in the bush, the members of which at once scampered off, except one half-grown animal which took refuge in a tree. The tree chosen happened to be so isolated that a leap into the branches of the next one was impracticable, and so the opportunity seemed favourable for a capture. Standing sentinel myself at the foot, with one native attendant, I dispatched the other aloft, where the little animal, perched as high up as he could go, was making the woods resound with his lamentations. Presently, to my surprise, I heard the whole troop coming back, and could see them running about, barking and chattering, inside the edge of the bush, about fifty yards away. Although apparently in a state of considerable excitement, they would not leave covert, nor attempt to cross the comparatively open intervening space. The cause of the excitement having been at length captured, still screaming, I walked slowly towards his fellows, curious to see what they would do. When I had covered about half the distance they began to retreat, and, even after I had entered thick covert, would not let me get nearer than about thirty yards. Having followed a little further, I picked out and shot a big male, whereupon the whole troop at once decamped at top speed. During a good deal of experience of chasing and capturing baboons, on the part of my assistants and myself, this stands out as the only instance, so far as I know, of their having shown the least disposition to resent actively human interference.

Baboons are rather soft, and easily killed. When angry or frightened young ones scream and chatter at the top of their voices;

when pleased they utter a soft "m 'm, m 'm." They make delightful pets when still immature, but after reaching adult age become in many ways a great nuisance, while the males, as they get older, become more and more morose and bad-tempered, and generally have either to be sent to some zoo, or destroyed as dangerous.

The gestation period covers about seven months, and in the eastern Transvaal the majority of the young are born from November onwards for two or three months.

The Yellow Baboon (*papio cynocephalus*).—North of the Zambezi the place of the chacma is taken by this closely-allied type, which is widely distributed through north-eastern, eastern, and central Africa, as far as Angola on the west.

The yellow baboon is, as its name implies, of a much lighter colour than the chacma, though, as with the latter species, the colour is by no means constant throughout its range. It is altogether a lankier and less heavily-built animal than its cousin, with long limbs, and a relatively light barrel. Its habits are similar, and I saw large troops raiding native gardens near the coast in Portuguese territory near Ibo.

Several other species are described, of which the best known is the mandrill (*papio maimon*) from the forests of equatorial Africa. It is a large and powerfully-built animal, and is easily to be distinguished by the bright blue and red markings of the bare portions of the face.

The Gelada Baboons.—Two species of these are described from north-eastern Africa. The nostrils are on the side, instead of, as in *papio*, on the front of the muzzle; the tail is long, and the head and upper parts of the body, decorated with a mantle of long hair.

Sub-order Lemuroidea

The Lemurs (family *lemuridæ*).—This is the only family of the sub-order now represented in Africa, though it is believed that at an earlier period it formed a very important section of the fauna of the continent. At the present day the headquarters of the lemurs is the island of Madagascar.

Three genera of the family *lemuridæ* are known in Africa, of which only one, divided into about a dozen species, is native to the south of the continent.

The members of the genus *galago* are quaint little animals, with elongated fox-like faces, big, round expressionless eyes, and long bushy tails. They vary in size from the dimensions of a small

monkey to not much bigger than a squirrel. They are entirely arboreal and nocturnal by habit, and spend the day curled up among the densest and thickest foliage they can find. Their food consists of fruits, insects and eggs.

The best-known south African species is the Moholi Lemur (*galago moholi*) generally known as the "bush baby." It measures only some fifteen inches in all, of which the tail takes up half. It is covered with greyish brown soft fur, and has a white stripe along the nose and two black rings round the eyes; the throat is white. It is an active little animal, and its call, constantly heard at night in the bush, has given to it its petty name.

Other south African species are *g. crassicaudatus*, of larger size and darker colour than the others, *g. garnetti*, *g. granti*, *g. mossambicus*, and *g. zuluensis*.

CHAPTER XVII

BIRDS

(1) Game—(2) Predatory—(3) Miscellaneous.

NINE hundred and twenty species of birds, including the European migrants, have been described from south Africa up to the present, while throughout the continent at large classification has made considerable progress. For zoological purposes the northern limits of the sub-continent are usually taken to be the Zambezi and Cunene Rivers, that is to say, roughly sixteen degrees of south latitude. North of this, central and east African types of mammals and birds begin to show themselves; though south of the Rovuma River, at about twelve degrees south latitude, I found a great many southern species present among the avi-fauna. A high range of mountains sometimes apparently affects the distribution of birds, and on the same expedition comparatively few were seen at the higher elevations among the Nyasa Mountains; while on descending them to the west several forms were at once noticed which had not been apparent on the eastern side.

The question of the migrations of birds has recently received a good deal of attention in south Africa. Many species, as is well known, spend the summer in Europe or in north Africa, and come south again before the cold weather begins; most of these are birds which breed in the northern hemisphere, though individuals of certain species are said to remain occasionally all the year in the south and nest there. Others again are purely African types, which go no further north than the tropics to spend the cold southern winter, and information is required as to exactly where some of them go to. As regards the European visitors, while some authorities have maintained that the migrants from farthest north wend their way farthest south, others suggest the reverse. During the last few years some very interesting experiments have been carried out among the white storks (*ciconia ciconia*). Ornithological societies in Germany and Hungary have adopted a method of attaching aluminium rings to the legs of young storks while still in the fledgling stage, with the

result that birds marked in Germany have been found a few months later in north-eastern Rhodesia, Bechuanaland, and Basutoland; while others, which came from Hungary, were discovered in Natal, the Transvaal, Basutoland, and the Orange Free State.

In order so far as possible to arrive at some approximate idea of the times of arrival and departure of various kinds of migratory birds, the Transvaal Museum, has, for some years, been in the habit of sending to various likely people in south Africa a list of species, with the request that they will note, on a card sent for the purpose, the date on which they first and last noticed each, together with the direction of the wind at the time.

Although the replies were unfortunately far fewer than might reasonably have been expected, still, enough were sent to form, even up to the present, very interesting data. Thus, white storks seem to begin to arrive about the middle of October, and depart from February onwards until April. European rollers arrive in October, and leave in March. Bee-eaters (*merops apiaster*) are resident from October till the beginning of May. European swallows begin to arrive about the end of September, and the last of them leave about the first week in May. Of African migrants, the stripe-breasted swallow (*hirundo cucullata*) remains from September till April in south Africa; the carmine-throated bee-eater (*merops nubicoides*) from September till the end of March. In fact, there is a general arrival of all visitors about the beginning of October, and an exodus at the commencement of the following April.

I propose in this chapter to deal only with some of the African game birds with which I chance to have a nodding acquaintance, as well as to touch on such of the predatory and other types as are likely to be of interest to a traveller who does not happen to be a specialist.

Order Struthiones

The Ostrich (genus *struthio*).—The ostrich belongs to the sub-class of flightless birds, devoid of any keel to the breastbone, and scientifically known as *ratitæ*. It is further the only representative of its family (*struthionidæ*), and is distinguished by the absence of all but the third and fourth toes on each foot.

Ostriches exist throughout the greater part of Africa, in suitable environment, but they are absent from the forest regions of west Africa and the Congo, and have not been met with in Nyasaland, nor in northern Rhodesia. This blank on the map forms a neutral

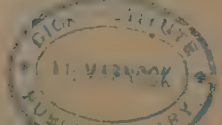
zone between the southern race, *struthio australis*, and those found through the northern part of German East Africa and Somaliland (*s. masaicus*, and *s. molybdophanes*). The extreme northerly form, also found in Arabia, is called *s. camelus*.

It was not until about the year 1870 that ostrich farming was seriously adopted as an industry in the Cape Colony; but in these forty years it has made enormous strides, both in scope and in the improvement of the birds by selection. In 1874 the weight of feathers exported was 36,829 lbs., valued at £205,640, while in 1904 the amount had risen to 470,381 lbs., valued at £1,058,988. In these thirty years, consequent on the increasing supply, ostrich feathers had sunk from £5 11s. 7*d*. to £2 5s. per lb. In east Africa, too, the industry is progressing well, and the quality of the birds is good. The ostrich, therefore, may be fairly considered to have taken his place among the useful domestic servants of man.

Wild birds at present exist in south Africa, in the north-eastern Transvaal, southern Rhodesia, and the southern part of Portuguese East Africa, besides Bechuanaland and German South-West Africa. There are large numbers in the Transvaal Game Reserves, from the Crocodile River to the Limpopo, a distance of some 300 miles, principally in the flats at the base of the Lebombo Hills. Such experiments as have been undertaken with wild birds in the Transvaal have not, however, so far been very successful, the quality of the feathers of the bush-bred bird being inferior to the Cape variety.

During the mating season ostriches are generally seen in pairs, a cock and a hen bird; less frequently several hens accompany one cock. The cock and the hen together excavate the nest, which is merely a large circular hollow scraped in the bare ground, often far from any trees or other shade. In this the eggs, about twenty in number, are laid. Those of the southern ostrich are of a very light straw colour, pitted with little depressions, whilst in the east African and Somaliland forms the depressions are of darkish colour, and in the northern type are altogether absent. The hen bird sits on the eggs by day and the cock relieves her at night, so that the eggs are never left unguarded during incubation. The birds sit with their necks extended straight along the ground, and the grey feathers of the hen by day and the black ones of the cock by night are very hard to distinguish. Here, if anywhere, is surely a point for the upholders of protective colouration!

In the eastern Transvaal the breeding period seems to lie between August and January. I found a complement of twenty-one eggs in



a nest on the 18th August, and one taken had a partially-developed chick inside. Another nest, containing eighteen eggs, was found on 28th December; the young ones were just ready to hatch out. I have also noticed very young chicks in October. On the Athi Plains of British East Africa the season seems very much the same. The incubation period lasts from five to six weeks, and on coming out the chicks are helpless for the first day, but after that speedily become active. If young ostriches are being artificially reared, great care must be taken that they are kept warm at night, as they are extremely susceptible to cold.

Wild ostriches feed on various leaves, twigs, seeds, and small plants, which they cover great distances to seek. To assist digestion they swallow stones and other hard objects. They are amongst the wariest of game, and are very fleet of foot, running with their heads held back and wings clear of the thighs. Unfortunately for them, their habit of going in wide circles deprives them of much of the advantage derived from their speed. A cock ostrich can deliver a blow from his foot equal to the kick of a horse, and tame ones are often dangerous at certain times of year. Their habit of "waltzing" has often been described. After leaving the nest the chicks accompany their parents until well grown, and later the birds are sometimes found associated in large troops, which probably are temporary collections of various family parties.

The chief enemies of the full-grown ostrich are the lion, the chita, and the hunting dog. The lion stalks the bird in the ordinary manner, the chita runs him down after crawling up as near as possible before making its dash, while the packs of hunting dogs are so well aware of the ostrich's weakness that they always run the diameter of the circle which he is describing. The two latter species of carnivora, however, prefer, when possible, the hens and half-grown birds as quarry. During the incubation period, the eggs are well guarded against the onslaughts of the birds and lesser beasts of prey; but before their tally is complete they are often left unprotected, and then hyænas, jackals, bush-pigs, and the like often wreak wholesale destruction. If, on her return, she finds that the nest has been tampered with, the hen is said to desert it and lay a fresh clutch elsewhere, previously breaking up the remainder of the eggs herself. I heard a remarkable story in east Africa, which, however improbable it may sound, was related to me by an unimpeachable eye-witness. As he was riding one day across the Athi Plains, he noticed a number of vultures hovering over a certain spot. His companion, an

ostrich farmer in the neighbourhood, remarked that they were dropping stones on to an ostrich's nest. Incredulous, my friend hastened to the spot, and there, just beneath where he had seen the vultures, was a nest, half full of eggs, several of which were broken, and there were a number of good sized stones lying in and around it. Mr. Sclater, in his "Fauna of South Africa," records a similar incident as having been reported from the north of the Cape Colony, the Egyptian vulture being there responsible. I have never come across anything of the kind in the eastern Transvaal or elsewhere, nor can I recall its being written of by any other authority than Sclater, and I think if the stones were really taken up and dropped by the birds it points to very curious and interesting local developments of intelligence. Of course, many birds of prey carry up into the air and drop tortoises, in order to break their shells; but it is the length of the chain of reasoning which makes the other feat so remarkable.

The call of the male ostrich is a loud booming, easily mistaken at a distance, and by a novice, for the roar of a lion. Millais, in "A Breath from the Veld," devotes an interesting paragraph to this matter.

Bustards (Otididæ)

This family is represented in south Africa by eleven species. They eat insects, berries and seeds, and lay two eggs to a clutch.

The Giant Bustard (*otis kori*).—This fine bird, which attains to a length of about five feet, a wing spread of eight feet and-a-half, and a total weight of forty pounds, is met with through east, central and southern Africa. It favours rather open country, covered with scattered bush. Its flight, though heavy, is rapid, and it can make excellent use of its legs also. It is generally seen singly or in pairs; sometimes a female with her latest offspring. It is an extremely wary bird, and seldom permits approach within fifty or sixty yards, even where unaccustomed to persecution. Mounted hunters sometimes adopt the plan of riding narrowing rings round it, which method seems to occasionally confuse and keep it on the ground.

The species appears locally migratory, and I have noticed it in particular areas only at certain times of year.

The Stanley Bustard (*otis cafra*).—This, the second largest of the genus, is partial to open country and hilly uplands, and is met with in the high country of east and south Africa.

Ludwig's Bustard (*otis ludwigi*) is another fine bird, measuring

over three feet in length. It is migratory in habit, and its environment is that of the last species.

There are eight species of lesser bustards, locally known as knorhaan, described from south Africa, all of which are excellent sporting birds. They get up suddenly and go away with a heavy, but fairly swift flight, some species uttering loud and raucous cries. When believing themselves unobserved they crouch on the ground with their necks stretched straight out in front of them, and often endeavour to escape by running through the grass with their heads held very low.

The best known in the bush country is the Red-Crested Bustard (*otis ruficrista*), so called from the reddish tuft of decomposed feathers on the nape of the male, more pronounced during the breeding season and fading soon after death. Like all its family, it is rather solitary in habit, being found usually singly or at mating times in pairs. It rises suddenly and silently and has a way of zigzagging through the trees when flying away, thus affording a very sporting shot. Its call is a series of single notes, harsh and frequently repeated; when uttering them the skin of the throat is puffed out like a bladder.

The most remarkable habit of this bird, however, is the "towering" of the males. Towards sundown the cock bird will suddenly rise straight into the air, higher, and yet higher, above the sea of bush, until at a height over a hundred feet he pauses, as if suspended, with flapping wings. Suddenly closing the latter tightly to his sides he drops towards earth like a stone. With such velocity does he fall that to the onlooker it seems that he must be dashed to pieces; but in a moment the wings are once more outsretched, and with a couple of graceful circles he alights safely and easily to once more rise and repeat the performance. I think these ærial gymnastics probably have some connection with the pairing season, or atmospheric conditions, as it is by no means always possible to witness them, and, while on some evenings a dozen birds may be in sight in the air at one time, months may pass without anything of the kind occurring.

The Dikkops (*genus œdicnemus*).—Two species of these are described in south Africa, the Cape Thickknee and the Water Thickknee. Like the bustards they are three-toed birds, and are found in pairs or small parties. They have a silent flight and a curious method of walking and running, the head being jerked forward with each step. They crouch and hide in the grass and bush even more than the knorhaans.

Phasianidæ

Most of the African game birds are contained in the family *phasianidæ*, which comprises the guinea-fowls, so-called pheasants, francolins and quails. Consequent on their many natural enemies, their numbers within any given area fluctuate very much from season to season. Thus, after a wet summer, when the grass has been long, providing plentiful cover, and a good supply of insect and other food, they are usually numerous; but when conditions are reversed, young and old birds suffer so much, and so few eggs get the chance of hatching, that their total is relatively small in the following winter.

The Crowned Guinea-Fowl (*numida coronata*).—This is the common guinea-fowl of south Africa, its range extends northwards to about south latitude fifteen degrees and roughly between longitudes twenty degrees and thirty-five degrees.

It is seldom found far from water, and, though partial to feeding in the open in the evenings and early mornings, during the heat of the day shelters itself in thick bush and long grass. Through the winter months these birds are seen associated in enormous flocks, and at this time frequent the neighbourhood of native villages, where they pick about among the lands for insects and grain. At night they roost in trees and thick bushes, frequently those overhanging water. The pairing time comes with the first rains, and thenceforth the birds are only found in couples in the densest bush, and entirely desert the neighbourhood of human habitations. In my experience, therefore, they do practically no harm to summer crops, and I think the occasional agitation against them on that account is founded on an entire misconception of their nature and habits. About March or early April, in the eastern Transvaal, the parent birds lead forth their broods, and the flocks once more begin to assemble. At mating time the colours on the bare skin of the head and neck become much brighter in the cock birds. From seven to ten eggs are laid in a clutch, and the spot is so well chosen that the nest, a small scraped-out depression amidst long grass and thick bush, is most difficult to locate.

Their food consists of seeds, bulbs, grass and other roots, and insects; they do an enormous amount of good in destroying locusts and their eggs, quartering the ground for the latter when they discover the breeding ground.

Guinea-fowls drink, in the winter, just at sundown. They are

very early risers, and at grey dawn they may be seen briskly moving over their feeding grounds, very little in the way of food escaping their notice. At such times they have an amusing way of ruffling their feathers and chasing each other. They are great runners, and most difficult to flush; when they do rise it is with a great deal of noise and fuss; the flight is straight, and they are very easy birds to shoot. Pursued by dogs, they seem to lose their heads and then take refuge in the nearest large trees, from which they show considerable disinclination to move. I have, in fact, seen a single dog, by running backwards and forwards barking from one to the other, keep guinea fowl treed in half a dozen places at the same time.

Their call is a raucous "ka-a-a-k, kak, kak, kak," which is instantly recognisable when it has once been heard.

Wild guinea-fowls in captivity interbreed with domestic poultry. Major Fraser kept a female for a long time, which mated with his cocks, and there used to be two hybrids at the Transvaal Zoological Gardens which were considerably larger than either of their parents. They domesticate readily. Mr. Sanderson used to have a great number about his farm, but, though so tame that they would even come into the house after food, the commencement of the breeding season saw their departure to the bush, whence they would not return for several months.

Probably few creatures have a larger number of enemies, so conspicuous does their congregation in flocks, and their large size, render them. By day a bird of prey, sailing above in the blue, constantly excites the utmost terror and consternation amongst guinea-fowls in the open, and causes them at once, with much cackling, to scuttle for the nearest shelter. By night every tree-climbing creature, from the leopard downwards, takes its share of toll, while all the host of other predatory beasts are ever on the alert to seize their opportunity. Civilised man with his gun, and savage man with his snares, exact at all times a heavy tribute; but in spite of it all, given favourable summers, with plenty of food and covert, the species holds its own amazingly well. I did not believe that such enormous numbers could exist in any one area as I saw in 1899 on the middle reaches of the Kwando. The country on the west bank was uninhabited, and there were stretches of swampy grass land extending from a fringe of thick forest to the river's brink. In the late evenings these places used to be one mass of guinea-fowl on their way down to drink, and one found it difficult to comprehend whence came the food to supply such countless numbers.

In German South-West Africa, northwards to the Cunene River, the place of the above species is taken by a nearly allied one (*n. papillosa*), distinguished by the crown or helmet being bright red instead of bluish black.

In Portuguese territory north of the Zambezi, and through all east Africa, the species met with is called *n. mitrata*, and has a small conical and pale-coloured helmet. Its habits are as those of the others; but in Portuguese Nyasaland I noticed a custom prevalent amongst the flocks which is foreign, in my experience, to *n. coronata*. After the conclusion of the morning foraging expedition, instead of going away to spend the heat of the day in the long grass or low scrub, they would fly up into the branches of large trees growing in swamps or surrounded by dense undergrowth or cane-brake, and remain there until the late afternoon, when they would come down to feed.

There are some four other species of crowned guinea-fowls known in Africa, and that which I saw on the upper Nile seemed not at all to differ in habits from its cousins in the Transvaal.

The Crested Guinea-Fowl (*guttera cristata edouardi*).—This is a very handsome bird, its head covered on the top with a crest of curly black feathers. The rest of the plumage is black, mottled with light blue spots, and there are chestnut markings on the breast.

The crested guinea-fowl is never found associated in the large flocks characteristic of its crowned relative. It is of most retiring habits, and small troops of only six or seven individuals are met with in mountainous or thickly-bushed country. Its range extends from Natal and Amatongaland, where it used to be pretty numerous on the top of the Lebombo Hills, through the coast lands of Portuguese East Africa. From the Zambezi northwards the local species has been distinguished under the title of *guttera lividicollis ghigi*. Several other allied forms are described from different parts of Africa.

The Vulturine Guinea-Fowl (*acryllium vulturinum*) is an inhabitant of the eastern part of Africa. It is a strikingly handsome bird, the head bare of feathers, the neck, wings and flanks being coloured a bright blue.

The African Pheasants (genus *pternistes*).—These birds (about equal in size to English partridges) are distinguished by their throats being bare of feathers, and generally brightly coloured. They are usually great runners, and often most difficult to flush, so that they are not very sporting birds. They are found in more or less thickly-bushed or forested country, and at no great distance from water.

There are about nine species recognised in Africa, of which three are found south of the Zambezi. Of these three, two are known respectively as the northern and the southern red-necked pheasants (*p. swainsoni* and *p. nudicollis*); both have the bare skin round the eye, and on the throat bright red. The former, which is distributed between about 15° and 25° south latitude, has reddish black legs, and in both species the males have strong and sharp spurs.

The food of *p. swainsoni* consists of insects, bulbs, berries, and grass seeds, which latter I have seen individuals jumping up to pick. The bird is very fond of small grain, and often hangs about villages in quest of scattered millet seeds, and does some damage to ripe crops of this kind. It drinks well before sundown and daily, feeding its way down to the water, and often flying back therefrom to the bush. In habit it is solitary, except at the pairing season and when the mother is looking after her latest brood, which remain with her until almost full grown. It roosts in trees, but the nest is made on the ground concealed among grass and brushwood, and, like those of most other game birds, is merely a slight hollowed-out depression lined with feathers and grass. I found a nest in March containing five eggs, and on 3rd May I saw a female with three young ones, apparently about a couple of weeks old. On the 28th of the same month, also in the neighbourhood of the Selati Railway in the eastern Transvaal, I met a single hen in the path. She ruffled her feathers and acted generally as if she would dispute progress, after a while running off with her wing dragging in the recognised manner of mother birds. A short search revealed the presence of a single very young chick in the grass by the path side; there may have been others, but the natives and myself were unable to find them. On the other hand, I have noticed coveys of young birds, fairly strong on the wing, in the same district in April ; so that I fancy the breeding season in the Transvaal low country, at all events, is not very regular. The cocks of this species are very fond of perching on the top of a dead tree or some dry branch, where, with a good field of view, they sit uttering their raucous call of "kwa-ri, kwa-ri, kwa-a-a-ri," which is responsible for their native name in south-east Africa.

When running they hold their heads very high and their bodies almost vertical. They are easily caught in traps baited with grain, and I have had several young birds running with my fowls at different times. When fully grown they quite naturally prefer the society of their own kind, and forsake the safety of domesticity for the freedom of the bush.

The other, or southern form of red-necked pheasant, exists in the wooded districts of Cape Colony and Natal, and extends as far north as the eastern Transvaal, where individuals are sometimes, though very rarely, found on the borders of the low country among the foothills of the Drakensberg. This (lat. 25° S.) forms about the extreme north limit of their range, and they are very uncommon there. They are easily distinguished from the kindred type by their red legs.

The White-Ringed Pheasant (*p. humboldti*) has the bright red bare skin on the throat surrounded by a pure white band; the ear covers are white, and the bill and legs bright red. It ranges as far south as the Inhambane district of Portuguese East Africa, where it is quite numerous, and near the coast appears to take the place of *swainsoni*. It inhabits very dense bush, and has the tree-perching and roosting proclivities of the other species. It extends northwards into British East Africa.

The Francolins (genus *francolinus*).—This genus contains over forty species in Africa. They differ greatly in size, ranging from the little coqui to the big Jackson's francolin of east Africa. Unlike the pheasants, they are feathered on the neck; the males are usually provided with spurs. They are, as a rule, more ready to take to the wing than the *pternistes* genus, and so find greater favour with sportsmen.

The Natal Francolin (*f. natalensis*) is a very common bird in the Sabi and Olifants areas of the Transvaal. It is found in wooded country, near rivers and spruits, favouring especially the thick bush by their margins, and may be recognised by its red bill and legs and white breast with V-shaped black markings.

Its feeding and drinking habits are very similar to those of the red-necked pheasants. It is a much shyer bird, and is less frequently found near villages. When disturbed it goes away with a strong and noisy flight, uttering harsh cries of alarm, and generally takes refuge in the branches of some leafy tree or bush at no great distance from the ground. It is also a good runner. It is usually seen in family parties, but the cocks sometimes go singly. I have seen coveys of young birds in April, and found a hen sitting on a clutch of six whitish eggs on 8th December near the Sabi River; but I also caught an unfledged one on 31st May, and noticed a newly hatched-out brood on 24th August in the same district, so that the breeding appears to occur very irregularly. The nest is hollowed out of the ground and hidden in the usual manner. A not uncommon

ruse of single birds to escape detection when perched in a tree is very quietly to creep round to the other side of the trunk, thus interposing it as a protection. By walking very slowly, so as to lead it to believe itself unobserved, and at the same time gradually working round, you will see it again slip round the tree, and it will continue to do this so long as it imagines you have not noticed it. It roosts in trees at night.

This francolin ranges from Natal northwards. An apparently kindred type (*f. schuetti*) exists in the Kikuyu forest of British East Africa, at a height of 8,000 feet. This species was laying in early October there, and I found a nest containing five fresh eggs.

The Crested Francolin (*f. sephæna*) is a smaller bird than the last. Its colour is rufous brown, merging into olive on the rump, the feathers having very conspicuous white shaft marks; underneath it is light buff, with dark shaftings on the upper breast, which become finer on the belly. The legs are red, and the cock bird has a very sharp pair of spurs. Its range is very much that of the northern red-necked pheasant, and farther north it merges into other nearly allied species.

The crested francolin is found in thick bush, usually near rivers or permanent water. It is solitary in habit, and very wary and shy. When disturbed it runs through the undergrowth at a great pace, and when flushed flies low and fast, always rising with a bush between itself and the intruder, and seldom giving a fair shot in the open. After its flight it usually settles in a tree or bush, whence it once more shoots away when followed up. Its food consists of insects, seeds, and bulbs. I have seldom noticed it in the lands near my residence on the hunt for grain, though it abounds in the bush close by. A good many young birds may be seen fairly strong on the wing in February, but I have observed male and female still paired in April. The young birds remain in small coveys with their mother until not quite full grown, when they separate. I found a nest of this species on 26th April. It was situated amid long grass surrounded by dense bush, close to a small dry sandspruit. The nest was merely a shallow hollow scraped out by the bird herself, and there were three eggs in it. The latter were tawny white in colour, covered, especially towards the thicker end, with very small dark spots of less size than pin-heads. One egg was more thickly spotted than the other two. They were rather conical in shape, the length being 1·72, breadth at thick end 1·34, at middle 1·43, and at thin end ·8 inches. This species, too, roosts in trees or bushes.

The cock birds are often seen sitting in the middle of a thick thorn bush, and their grating calls are continually heard in the mornings and evenings.

Shelley's Francolin (*f. shelleyi*) is about the best sporting bird of the genus in the Transvaal low country. It favours lightly-timbered and open country, and I have never seen it in the thick bush. It is a handsome bird, with white throat surrounded by a black line, a mottled black and white breast, and yellow legs. It sits very close, and is generally found in small coveys. It roosts on the ground, and is a great insect eater.

The well-known Cape Redwing (*f. levaillanti*) and Cape Partridge (*f. africanus*) are confined to the high country of south Africa, and both afford good sport.

The Coqui (*f. coqui*) is the smallest of the genus. The crown of the head is reddish and the sides of the face yellow, which, with its size and its bright yellow legs, render it easy to recognise. It is widely distributed, and is found in most of Africa south of the Equator. It is usually met with in small coveys, in open bush country near water. It is a ground rooster, and sits very close. When flushed it flies well and strongly. This was one of the very few species of francolin which I noticed between Ibo and Lake Nyasa.

As the coqui is the smallest, so Jackson's francolin is much the largest of the genus. It is, in fact, nearly as big as an English pheasant. I met with it in some low scrub near the foot of the Laikipia plateau in British East Africa. It is named after Mr. F. J. Jackson, C.B., C.M.G., the Lieutenant-Governor of that colony (now Governor of Uganda), who discovered it.

All the above pheasants and francolins benefit the farmer in that they prey largely upon the eggs and young of locusts.

Three species of quail belong to south Africa; each is migratory in habit. The Cape Quail (*coturnix africana*) is a sub-species of the European quail, and is that usually met with by sportsmen in south Africa; but the type common to the Transvaal eastern bush country is the Harlequin Quail (*c. delagorguei*). It appears and disappears with remarkable suddenness, and rather irregularly; but, generally speaking, it arrives in the low country at the end of the wet season—about April—and remains until August. I have seen large numbers in April, after an exceptionally wet season, when the grass was very long, and have noticed pairs in August. That the natives recognise its departure towards the end of the winter as being fairly regular is

manifest from their current superstition that a month or two before the rains the quails all turn into rats. This belief is due to the fact that, towards the close of the dry season, pickings of all kinds become scarce in the veld, and so the quails migrate, and the rats, seeking the comparative plenty of the villages, swarm thereto in hosts.

Turnicidæ

Button Quail (genus *turnix*).—Three species of Hemipodes, or button quail, exist in south Africa. They are smaller than true quail, solitary, and partially migratory in habit.

Pteroclidæ

The Sandgrouse (genus *pterocles*).—Four species are described from south Africa: the Yellow-Throated Sandgrouse (*p. gutturalis*), the Spotted Sandgrouse (*p. variegatus*), the Double-Banded Sandgrouse (*p. bicinctus*), and the Namaqua Sandgrouse (*pteroclurus namaquus*). Of these, the double-banded sandgrouse occurs in the bush country of the eastern Transvaal. The crown of the head and the forehead are white divided by a black band, and the upper parts of the body black mottled with yellow.

The double-banded sandgrouse appears to be locally migratory in habit. It prefers dry and often stony surroundings, with plenty of sandy soil. In exceptionally wet summers the birds disappear altogether from their usual haunts, while, if there is only a small rainfall, they remain throughout. For instance, during the summer of 1906-7, which was very wet, I do not recollect having noticed any, while in the following one, which proved extremely dry, they were present all the time. In 1908-9, again, little rain fell before Christmas, and plenty of sandgrouse were seen, but they disappeared as soon as the heavy rains began in January. After a couple of weeks of dry weather in the middle of the rains I have noticed their reappearance, so that I fancy they do not remove farther than perhaps, the higher and drier sand-ridges, where they are less likely, under ordinary circumstances, to be encountered.

They are normally seen in pairs; sometimes a considerable number will be noticed feeding, or resting in the heat of the day under trees, but when disturbed they always break up into couples. In the gloaming, between sunset and dark, they assemble at the drinking places in congregations, sometimes, of hundreds. They remain as a rule but a few minutes, and then, as night closes

in, come speeding back with a whirr of wings, and at a tremendous pace. In fact, whether when proceeding to, or departing from, the water, the speed at which they travel, coupled with the uncertain light, makes this form of shooting one of the most difficult possible. When flushed by day the pairs get up very suddenly and quietly, and fly fast, with a rather zigzag flight.

I found a nest in the country north of the Sabi on 30th April. It was merely a little depression scraped in the dust, and absolutely in the open; there was no lining to it of any kind. It contained two eggs covered with brownish blotches; they were an exact oval in form, and measured 1·55 by 1·1 inches.

Three species of snipe are found in south Africa: two species of *gallinago*, one of which is a European migrant, while the third (*rostratula bengalensis*, the Painted Snipe) resembles, in habits and appearance, a rail rather than a snipe.

Water-Fowl (Anatidæ)

Many parts of Africa are extraordinarily rich in water-loving birds, and I shall never forget my first glimpse of the Zambezi near Lealui, where the enormous swamps collect millions of wild-fowl of all families and species, and form a real paradise for a lover of this form of shooting. Geese, ducks, teal and widgeon, pochards and shovellers, ibises, herons, flamingoes, and all the host of lesser water-fowl, here find a congenial home. The ear is filled and confused by their varied cries, and of an evening and morning their long "flights" may be seen streaming in every direction from and to their various feeding grounds. Great is the contrast to this scene of life and activity which meets the eye of the traveller amid the dismal sudd swamps of the upper Nile. Here, on every side stretches a scene of weary solitude—a wilderness of reeds and feathery papyrus, unvaried by a sign of visible life, excepting an occasional solitary and meditative shovel-bill (*balæniceps rex*), which, hermit-like, finds content in the lonely uniformity of his surroundings.

The largest and one of the best known of African geese is the Spur-Wing (*plectropterus gambensis*), which extends right through the Ethiopian region, from the White Nile southwards. It has a sharp spur springing from the carpal bone of the wing, and is met with often in considerable flocks. It is very shy and wary, and is usually best bagged with a small rifle, its skin and feathers offering considerable resistance to small shot. The flesh of the old males is tough,

leathery, and strong tasting. It has an occasional habit of perching on trees, a custom which it shares with some other species of African water-fowl. The Egyptian Goose (*chenalopex ægyptiacus*) is another very widely-spread bird, ranging through the greater part of Africa. In south and south-central Africa it usually occurs in pairs.

The Knob-Billed Duck (*sarkidiornis melanotus*) is very common on the upper Zambezi, and is elsewhere distributed through most of Africa. The curious knob on the bill from which it derives its name is present in the males only. I have seen these ducks perching upon quite high trees. They are seen in the eastern Transvaal, like others of their order, only as occasional migrants; but immediately to the east of the Lebombo Hills, in Portuguese East Africa, they may often be noticed on the numerous small lakes and pans which exist there.

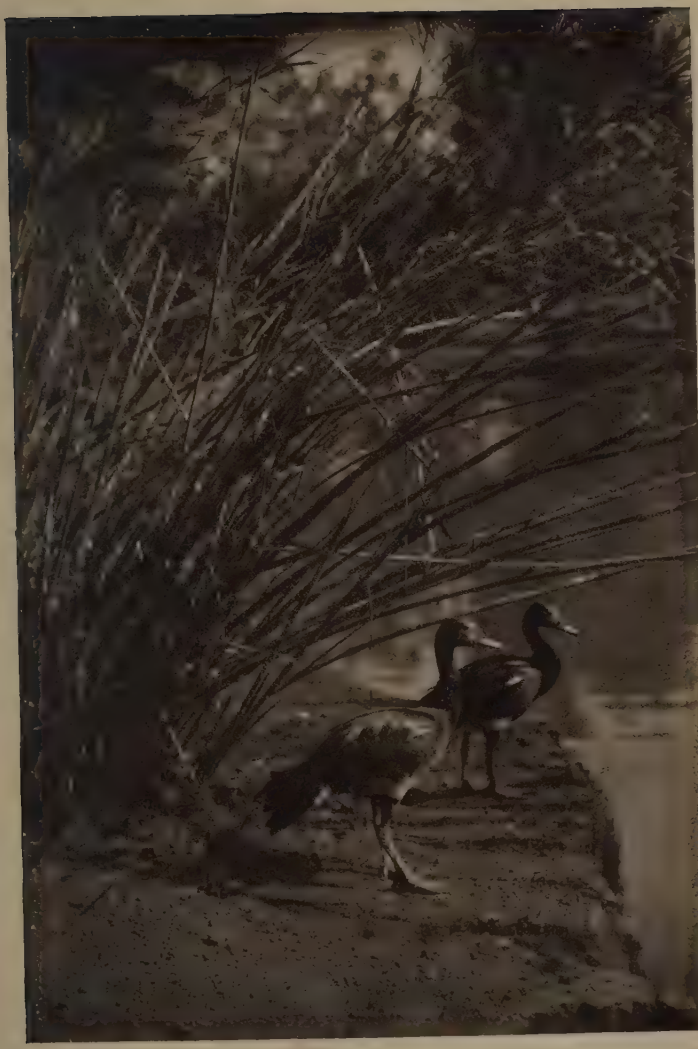
Other species common to south Africa are the Dwarf Goose (*nettapus auritus*), the Yellow-Billed Duck (*anas undulata*), the Black Duck (*anas sparsa*), the Red-Billed Teal (*anas erythrorhyncha*), the Cape Widgeon (*anas capensis*), the Hottentot Teal (*anas punctata*), the Maccoa Duck (*erismatura maccoa*), the White-Backed Duck (*thalassornis leuconotus*), the south African Pochard (*nyroca capensis*), the European Shoveller (*spatula clypeata*), the Cape Shoveller (*spatula capensis*), the White-Faced Duck (*dendrocygna viduata*), the Whistling Duck (*dendrocygna fulva*), and the south African Sheldrake (*casarca cana*).

Of the above, the south African Pochard, sometimes colloquially known as the "diver," is partially migratory in habit in south Africa, though north of the Zambezi it is met with in large flocks all the year round. As its trivial name implies, it seeks its food by diving entirely under the water, remaining sometimes beneath the surface for a considerable time, and swimming with only its head and neck protruding.

Falconidæ

The birds of prey, of which Africa contains its full share, are divided into two orders, the first containing the eagles and hawks, the vultures, the osprey, and the secretary bird, while the second comprises the owls.

The true eagles, and the nearly allied hawk eagles, are divided into four genera: *aquila*, containing the Black Eagle (*verrauxi*) and the Tawny Eagle (*rapax*); *spizætus*, containing the Martial Hawk Eagle (*bellicosus*), and the Crowned Hawk Eagle (*coronatus*); *hieraætus*,



Spur-winged Geese.

containing the African Hawk Eagle (*spilogaster*), the Booted Eagle (*pennatus*), and the Brown Eagle (*wahlbergi*) ; and *lophoætus*, containing the Crested Hawk Eagle (*occipitalis*). All these birds are feathered down to the toes.

The martial hawk eagle is one of the handsomest as well as the largest of the tribe found in Africa. Its range includes the greater part of the Ethiopian region, and though nowhere actually common, in any country well stocked with its natural prey, one or a pair of these grand birds may be often seen sailing high in the air, its white breast gleaming in the sun.

They prey on game birds of all kinds, hares, lambs and kids, duikers and steenbucks, and the newly-born young of larger antelopes if found unprotected, besides iguanas, snakes, and tortoises. I shot one which was eating a large iguana, and I put another up from the newly-killed body of a big puff adder. Their method of attacking snakes is that of other large *raptores*, including the secretary bird: the reptile is held firmly by the talons and torn by the beak, while the wing is used as a shield against the poison fangs. Small carnivora, up to the size of a half-grown serval, are also attacked much in the same way as other mammals of similar size. If the animal is too big to seize and carry off summarily, the eagle swoops down, imbeds his talons firmly in its back, flaps his wings in its eyes, and pierces the back of its skull with his beak. I have seen them stoop at both guinea-fowls and francolins on the wing; but as a rule they capture their winged prey on the ground, watching its movements from the shelter of a neighbouring tree, and then pouncing on it with a sudden rush. At Sabi Bridge the fowls suffered severely for a long time from the depredations of two of these birds. They would return again and again at irregular intervals for a fresh victim, and so wary and alert were they that it was for a long time impossible to get a shot at either of them. I have seen one sweep from his ambush among the dense foliage of a fig tree on the other side of the river, 300 yards away, straight as an arrow upon some unsuspecting fowl, light on the ground close by it, and then capture it with a shuffling run, instantly flying off again to safety, its prey clutched tightly in its talons.

When brought wounded to the ground the martial eagle fights fiercely for its life, and is extraordinarily quick in striking with its talons, which it uses much as a cat does her claws. I remember bringing one down with a rifle bullet from the top of a pretty high tree. It fell heavily with a broken wing; but on several "boys,'

accompanied by a greyhound, running to the spot, it threw itself on its back, gave the dog a wound in the throat with its beak, which narrowly missed the large artery, and placed her *hors de combat* for the time being, while one of the natives who followed barely escaped a lightning stroke from the claws which would certainly have laid bare the bone of his leg.

The nest is built in a tree of rough sticks, and one or two eggs are said to be laid in a clutch.

The wing measurements of an average bird taken just after death, were sixty-nine inches from tip to tip, and the weight ten pounds six ounces.

The tawny eagle is of mottled brown colour above, and tawny chestnut beneath, with yellow legs. It is a relatively short-tailed bird, and so has a rather "stumpy" appearance. It is very fond of hilly country, and is often found in the neighbourhood of isolated rocky outcrops. It attacks all game birds and small mammals up to the size of lambs. Unlike the martial eagle, which, when able to do so, likes to carry its prey off to a tree to devour, the tawny eagle seems generally to prefer making its meal on the ground. It probably destroys a large number of snakes, and I have several times noticed individuals in the act of doing so. Now and then it no doubt is worsted in encounters with the former; Ranger de Laporte reported having found one, which, from its appearance, had obviously met its death from a snake's fangs. I think all the larger birds of prey do their part in snake killing and are amongst the most dangerous enemies of these reptiles.

There are two species of harrier eagles of the genus *circætus* in South Africa, the Black-Breasted Harrier Eagle (*pectoralis*), and the Banded Harrier Eagle (*fasciolatus*); both are large and powerful birds, the tarsus feathered less than half-way down, and they live principally on frogs and reptiles. I found a night adder and a young cobra in the stomach of one of the former.

The Bâteleur Eagle (*helotarsus ecaudatus*) is more akin, both in appearance and habits, to the buzzards than to the eagles. It is widely distributed in Africa, and is a bird easily recognised on the wing by its very short tail and its manner of flight, which consists in sailing along, with first one wing, and then the other, elevated. The full-grown bird is glossy black below, and rich chestnut above, and the legs are coral red.

Contrary to the generally accepted idea, I do not believe that the bâteleur attacks either live mammals or birds. Its food seems to

Marabou Stork.

A pair of Fish Eagles (*Haliætus vocifer*).

consist of reptiles and carrion. I have often noticed it coming down to kills with the vultures, and it frequently gets there before them, and picks the eyes from the carcase. I saw a bird, still in its immature plumage, perched on a tree fraternising with two *gyps kolbei*. Ranger de Laporte observed one driving away several vultures; on going to the spot he found a five-foot python with both its eyes picked out, presumably the work of the bâteleur. I kept one at Sabi Bridge for several months; it became quite tame, and eat any carrion given to it greedily. In the same large cage were confined a number of small birds, and during the whole time the bâteleur never attempted to do them any harm, nor did they display any fear of it. When, however, as occasionally happened, one or other of them died from natural causes, it lost no time in eating the body. I found also that while a live rat was disregarded, a dead one was taken immediately. Of course, the actions of any creature in captivity are not always criteria of what he will do when in a wild state; but, at all events, it is safe to say that though many bâteleurs come sailing over my station, not one has ever attempted to touch the fowls, nor have I ever noticed them shepherding guinea-fowl or francolins in the manner of the truly predatory birds.

One of the best known of the kites is the Yellow-Billed Kite (*milvus ægyptius*). These birds are partially migratory, arriving in south Africa during September, and being seldom seen after the middle of March. However, they go no farther north than Moçambique, where I have seen them in great numbers in July, and they were very numerous at all the up-country Portuguese posts as far as Lake Nyasa in August. They are great carrion eaters, and also destroy large numbers of locusts and other insects. They have the reputation of being confirmed foes of young chickens, though I have not personally known any of the large numbers present around Sabi Bridge about the end of each year to sin in this respect. I believe it to be a vice acquired by individuals, through familiarity with man and his surroundings, and that the killing of warm-blooded animals is not really natural to the birds. Major Fraser says "after seven years of innocent life, the yellow-billed kites started on my chickens; I shot two with chicks in their claws; none have erred since, and so I take it that pair learned evil ways elsewhere." They have a way of suddenly swooping down, just grazing the ground, to carry off any piece of meat or offal that may be lying thereon, and are always extremely bold and careless of man's presence. In November and December, when the impala are

lambing, great assemblies of these kites are seen on the Sabi. Hundreds of them circle round day after day over the bush, and seem tireless on the wing. They are picking up the afterbirths of the impalas. Through January and February they are less and less seen, and have entirely disappeared by the end of March. I have seen pairs nesting in December near the Sabi. The nests are large rough structures of sticks, and are made in high trees.

The Black-Shouldered Kite (*elanus cæruleus*) is a handsome little bird, easily distinguished by its habit of remaining poised in the air with flapping wings. It lives principally on small reptiles and insects.

The Sea Eagle (*haliætus vocifer*) frequents all the permanent rivers and lakes of the Ethiopian region where fish are plentiful, and its piercing cry is the constant indication of its presence. It is a very handsome bird, of black, white, and rich brown plumage. It perches on trees overlooking the water, watching ceaselessly for some unwary fish to approach the surface. Its victim perceived, the sea eagle darts downwards with a swift rush, and, its body just lightly grazing the water, into which its talons are inserted, it grasps its prey and bears it off in triumph to devour, amid raucous cries of triumph, in the high branches of some bare tree. The nests are very large, and are built usually in fairly inaccessible trees. Two eggs are laid in a clutch.

The Lämmergeyer (*gypætus ossifragus*) is the southern form of the genus, the other (*barbatus*) being an inhabitant of southern Europe and northern India. It extends through most of the mountain ranges of the Ethiopian region, and, though a killer of live animals, belongs to the vulture, rather than the eagle tribe. It is of very large size, spanning over five feet across the wings. Its food consists mainly of carrion and bones, but it also attacks lambs, the newly-born of wild animals and sickly sheep.

The Secretary Bird (*serpentarius serpentarius*) has had a good deal of romance written round it on account of its snake-eating proclivities. As a matter of fact, it attacks snakes and other reptiles no more and no less than the other large members of the *accipitres* order, and does as much harm to the young of game birds and hares. It is generally seen stalking solemnly along in pairs or singly, on the look out for food, and when disturbed it makes off at a fast run, the long legs covering the ground at a great pace; the wings are stretched out, but are seldom used for flight, and then only for a short distance.

Other genera of the *falconidæ* include, in south Africa, five species

Griffon Vulture (*Gyps kolbei*) on Nest.

of harriers and a rather rare harrier hawk (*polyboroides typicus*), six goshawks, two buzzard eagles, five sparrow hawks, three buzzards, two perns, five falcons, two hobbies, six kestrels, osprey, lanner, and vulturine sea eagle.

VULTURIDÆ

Seven species of vultures are indigenous to South Africa, and the majority are, either themselves, or in closely allied forms, spread over most of the Ethiopian region. Probably there is no other bird whose appearance on the wing and on the ground offer more vivid contrast. Sailing majestically far up in the blue, without perceptible movement of its great pinions, it seems to cleave the air free of all conscious effort and conveys to the earth dweller far below the ideal of poetic motion. When seen on mother earth it is hard to realise that this ungainly, clumsily-hopping, and repellent-looking bird, is the same that so delighted our senses when on the wing; nor is the picture in any sense restored, as, disturbed at its feast, it flaps heavily away to some adjacent tree.

The habits of these birds have formed the theme of frequent description. They roost later in the mornings than others of their feathered kin, and though the falcon tribe are usually not early on the wing, the vultures are still more tardy in setting about their day's work. When the sun has fully dispelled the morning mists, and the air becomes clear, they leave the leafless bough which has been their night lodging and circle far up, until, from being a mere speck in the sky, they are finally lost to the view of the naked eye altogether. They are solitary in their watch for food, and each bird floats about quartering his own patch of the heavens, until his amazingly keen sight indicates to him the presence of a dead animal, when he sweeps straight down in a long inclined plane. Seeing him drop, his nearest companions on right and left follow suit, and the signal is taken up until every vulture for many miles around is gathered to the feast. The old theory that vultures hunted by scent, which found a stanch supporter in an eminent naturalist of the middle of the past century, has been discredited by later observation, and it is now universally held that it is their keen sight alone which tells them the whereabouts of their food. I think no one who has seen vultures drop in scores from extreme altitudes within a very few minutes of an animal having been killed, can doubt this for a moment. After two occasions on which I had happened to shoot crocodiles basking on sandbanks, stone dead with the first shot, so that they lay in perfectly natural

positions, I took the trouble to visit the carcases every day, in order to see what the vultures did. On one occasion it was a week, and on the other five days, before any birds came near; though as many minutes would barely have elapsed in the case of a mammal lying obviously dead in the bush ere they put in an appearance. A dead animal well covered up with branches is also quite safe from vultures; and the leopard, in placing his kill up a tree, probably has these birds, as well as four-footed scavengers in mind. It is doubtful how far, if at all, any birds are served by their sense of smell. I have again and again noticed that francolins and knorhaan will feed quite close up to leeward of a man so long as he remains quite still; and in stalking guinea-fowl it is quite unnecessary to bother about the direction of the wind, provided they neither hear nor see you. Though the gathering of vultures is nearly always the sure indication of a dead animal, the number assembling is no guide to the size of the carcase. I have seen at least fifty follow a leader down to a half-consumed hare or snake, while there is no doubt that even their acute vision is sometimes deceived, as was evident from a number of them being attracted by a red blanket lying on the ground near one of my camps.

Should the carnivore responsible for the act be lying up by and guarding his kill, the vultures will be noticed sitting thickly on the trees around, gazing fixedly in the direction of the carcase; but they generally flap away on the approach of a human being, thus giving the alarm. When engaged at a carcase, they fight amongst themselves and make a good deal of noise. It is astonishing with what rapidity they can consume even quite a large beast, and of a creature of the size of a dog nothing is left in a few minutes except the bigger bones, the lesser ones being swallowed whole. They will eat any carrion, except the remains of one of their own species, and though they must often have to spend long periods fasting, they make up for their enforced abstinence by the voracity of their appetites when the opportunity arrives to satisfy them. Vultures seem to hang permanently about the vicinity of some of the large villages of central Africa, roosting on the trees close by at night and spending the day hopping and waddling about among the garbage heaps, thus leading a luxurious and untroubled existence. I kept a tame one of the common southern species (*gyps kolbei*) for some months. It was quite peaceable and well disposed to the dogs, fowls, and other animals which came near its perch, to which it was tethered by a light leg chain, and was quite docile and apparently contented in

Griffon Vulture.

Vultures and Marabous on a Tree (Upper Nile).

captivity from the first. It was originally caught through its own greed, being found with its head so firmly fixed in a carcase that it could not withdraw it.

The Griffon Vulture (*gyps kolbei*) is the common "aasvogel" of south Africa, and is, in the sub-continent, by far the commonest of the family. It is there found at kills mixed with, but in much greater numbers than, the other species. It constructs a large rough nest in a high tree or rocky kranz, and in the eastern Transvaal I have seen pairs building in February. One egg only appears to be laid.

The White-Headed Vulture (*lophogyps occipitalis*).—These birds are not uncommon in the eastern Transvaal, and they have been on several occasions accidentally caught in traps or shot by guns set over kills. I have seen them at carcases in company with the griffon.

The Black-Vulture (*pseudogyps auricularis*) is easily recognised by its dark colour, large size and red head and neck. It is seldom seen otherwise than singly, or at most two or three together. Whether perching on trees or feeding at carcases, these birds always seem to keep apart from other vultures, and they are very much more difficult to get near than most species.

Ruppell's Vulture (*gyps ruppelli*) and the White-Backed Vulture (*pseudogyps africanus*) are smaller species than the above.

The Egyptian Vulture (*neophron percnopterus*) is nowhere numerous in the eastern Transvaal, though it becomes rather more so towards the north. I have generally noticed it singly or in pairs. North of the Zambezi it is very much more often seen. It is easily to be distinguished from the surrounding vultures of other species by its slender head and beak and the lanceolate feathers on the back of the head and neck.

The Hooded Vulture (*neophron monachus*).—This bird has a head and beak shaped like the last; but there are no long feathers on the back of the former, which is of a dark flesh colour. It is of relatively small size.

Strigidæ

There are thirteen species of owls described from south of the Zambezi. It will be sufficient here to mention one or two of the larger types. The majority prey on insects, such as scorpions and locusts, also on small lizards, rats and mice. Some, such as the little Scops Owls (*pisorhina capensis*) appear to be insectivorous only.

The Giant Eagle Owl (*bubeo lacteus*) is much the largest of the

tribe. It is of dark brownish-grey colour mottled with white, and has prominent ear tufts. It is distributed through most of the Ethiopian region. It is, like the other members of its family, strictly nocturnal, sleeping in the daytime amid the foliage of some leafy tree, usually crouching, its breast supported on a branch, in preference to perching in an upright position. At night it sallies forth to attack birds from the size of guinea-fowls, and mammals from the size of hares downwards. It is a confirmed robber of the poultry yard, and will force its way night after night into badly constructed fowl-houses until it has cleared out the roost.

It makes a peculiar clucking sound when angry, much resembling the cracking of a hard nut, which its repeats many times. By night its utters a deep hoot, but has also another cry, which I have heard it make in the early morning from its tree; this is a very shrill and penetrating whistle or screech, which can be heard a long way off.

I found a young bird, nearly full grown, but still unable to fly, hidden away in the fork of a large tree about eight feet from the ground. About dusk its mother arrived, and I brought her down with a charge of shot apparently dead. She was carried into camp by the legs, and thrown into a corner to be skinned in the morning. When morning came she had disappeared, and after a long search was discovered under a bush about fifty yards away. She was still to all appearance dead, and during the march that day was carried in a basket on a "boy's" back, quite limp and motionless. That night she again disappeared and was found under the same conditions as before. I now began to suspect that she was not quite so severely injured as I had believed, and could, in fact, discover no damage except to one of the wings. The following night some raw meat left beside her had vanished, and two days after arrival at my station she abandoned her artifice, ate everything that was given to her, and, like her offspring, soon became very tame. Both these birds have been in the Zoological Gardens at Pretoria for the last four years. I never knew an animal sham dead longer and more naturally.

As a set-off to the damage which they do to small game, there is no doubt that these owls also eat considerable numbers of locusts and other insects and reptiles, including snakes. A large one will measure some three feet across the wings, and their bodies are broad and bulky.

The Spotted Eagle Owl (*bubo maculosus*) is another large owl, though less in size than the last. It is very much mottled with dark brown, yellow and white, and has prominent ear tufts. It is spread

through most of Africa south of the Equator. It preys on small mammals such as rats and mice, reptiles and insects. I have never known this species to attack domestic poultry.

Many African tribes are intensely superstitious about owls, and the birds calling near the villages, or perching on the huts at night, is believed to presage disaster. Crossed sticks are occasionally placed on the apex of a hut to obviate the latter occurrence.

Miscellaneous Birds

The Snake Bird (*anhinga rufa*).—This curious and solitary bird may occasionally be seen by the margins of African rivers, lakes, and pools, into the waters of which it dives in pursuit of the fish which form its food. It has a curiously long and flexible neck, which it can twist in all directions, and which has conferred on it its colloquial designation. When swimming, the head and neck alone protrude above the surface and look at a distance exactly like a snake as they undulate backwards and forwards with every stroke. The bird can remain about five minutes under water, and on emerging, often many yards away from where it dived in, will stand motionless on the bank, or on a rock, with wings spread out to dry, for half an hour or more. I once watched one standing on the edge of a rock about six inches above the surface of a deep pool. A fairly large crocodile was floating about lazily near by. Most of the time the snake bird seemed entirely immersed in his own thoughts, but when the crocodile happened to come quite close—within two or three feet—he would utter a couple of hoarse "quacks" and twist his neck round towards the reptile, though without shifting his feet an inch. This went on for over an hour. It was one of those cases which tend to indicate that wild creatures know quite well when their natural enemies are not to be feared.

The Crowned Crane (*balearica regulorum*) is always a striking-looking bird, with its slatey plumage, and its curious patch of straw-coloured bristles on the head. The bare sides of the face seem to vary in colour in the different local races in Africa, those of the southern species are white, bounded with bright red above.

The Green Ibis (*theristicus hagedash*).—Popularly known as the "hadada," this bird is found throughout the greater part of the Ethiopian region. It frequents the vicinity of rivers, and in the early morning and late afternoon its loud and harsh cry, which its name not inaptly describes, is a familiar sound, as in pairs or small flocks up to a

dozen or twenty in number the birds wing their way to and from their feeding grounds. They fly pretty high, rather heavily, but at a pace which is deceptive. I have always found them extremely wary birds, which, when resting in trees, seldom permit near approach, and usually alter the course of their flight the instant they catch sight of anything suspicious. Moreover, their course is usually directed straight up or down the middle of the stream, and they appear to leave it only at the point nearest to their favourite feeding ground. Their food consists almost exclusively of insects, which they seek in every kind of country, but in swampy land for choice. The flesh is of dark colour and excellent eating.

The Marabou Stork (*leptoptilos crumenifer*).—This large and rather repulsive-looking bird, with its almost naked pink head and neck, huge and powerful beak, and scavenging habits, is nevertheless possessed of the most beautifully soft, snow-white, downy feathers on its under tail covers. It is common all over tropical Africa, but is much less frequently met with south of the Zambezi. In parts of east Africa I have seen large flocks feeding about much like white storks, and they will eat insects, fish, and any small mammals or birds that are too young to escape them. They are generally among the first to arrive at kills, and may be seen sitting around on the trees mixed up with the vultures, with which they can more than hold their own. In the ponds in the Transvaal Zoological Gardens, they appear to tyrannise absolutely the herons and other large water birds, which often display considerable fear of them as they stalk solemnly round making occasional vicious prods at any not quick enough in clearing a path.

The Saddle Bill (*ephippiorhynchus senegalensis*).—This very large stork is rather rare in south Africa, but I have once or twice noticed pairs on the Sabi, about February, stalking about in the shallows and on sand-banks. The fore part of its bill is crimson, the centre black, and the saddle or shield which comes just above the nostrils bright yellow.

The White-Bellied Stork (*abdimia abdimi*).—This is an African bird, though it only visits the south during the warm summer months.

The Black Stork (*ciconia nigra*) is also a summer visitor, but certainly in individual cases remains in the south all the year round, as I have several times noticed them in the Transvaal low country during the winter months, always in pairs, and one was shot on the Olifants River early in July. All storks, especially the well-known

European migrant, follow the locust swarms in great numbers, and, in common with kites, starlings, and many others, levy an enormous toll.

The Hammerhead (*scopus umbretta*).—Most residents in Africa are familiar with this queer, stolid-looking bird, with its crested head and plain brown plumage. Although measuring but little over twenty inches in length, it yet builds a nest which might well be worthy of the largest bird that flies. Mr. Haagner, in his "Sketches of South African Bird Life," thus describes it: "It consists of sticks and mud: first a saucer-shaped foundation, about three feet in diameter, is built of large sticks thrown together and cemented with mud. Upon this foundation a circular dome-shaped structure is erected, containing a round chamber (sometimes two); it is a solid structure, with a round entrance hole just large enough to admit the bird. The top is often decorated with old tins, rags, bits of plank, and we have even found dead birds, and old bits of skin. It may measure four feet by three and a half, and is sufficiently strong to bear easily the weight of a heavy man." These nests are, of course, more or less permanent structures, constantly used by the same pair of birds.

Herons.—There are fifteen species of herons and bitterns described from south Africa, amongst them, and extending through most of Africa, is the splendid Goliath Heron (*ardea goliath*), which is the largest of its tribe in the world.

Doves.—These pretty and confiding little birds exist in many species all over Africa. In the south much the most common is the Cape Turtle Dove (*turtur capicola*), which swarms about the poultry yards and old gardens picking up grain, and shortly before sundown may be seen flighting in immense numbers, and at a great pace, to and from the water.

The little Namaqua Dove (*œna capensis*) appears to be a winter migrant to the eastern Transvaal low country. At any rate, during two summers, when I was specially on the alert for it, it did not put in an appearance at Sabi Bridge at all, though plenty were to be seen by May.[1] In Portuguese Nyasaland in August it was not met with until an altitude of 1800 feet was attained, at about 300 miles from the coast. It was then numerous.

The Grey Lourie (*chizærhis concolor*).—In south-central Africa between latitudes 15° and 25° there is no more familiar bush sound than the long-drawn "Go away" of the grey lourie.

I did not notice it in Portuguese Nyasaland, but in Angola, at about the same latitude, it is quite common. It is a bird of short

[1] In the present year (1911), I saw one pair in December.

flight and rather lethargic habits. During the warm hours of the day, it sits, usually alone, in some well canopied tree, at intervals uttering its distinctive and rather querulous call. At certain seasons of the year, grey louries seems to collect in small companies, and are then very noisy. The crest is alternately raised and depressed while the bird is calling. It is popularly supposed to warn the game of the hunter's presence; but it will sit for hours saying "Go away" at frequent intervals, completely irrespective of human presence, and I do not believe the cry to be invariably a signal of alarm. The flesh is quite good eating, what there is of it. Another familiar bush sound is the note of the Coucals or Bush Cuckoos (*centropus*), of which there are several species. This is a frequently-repeated "Coo-coo-coo, coo, coo, coo," gradually dying away into a minor key. These birds are non-parasitic in their nesting habits.

The Honey-Guides (*indicatoridæ*) are among the most interesting birds in Africa. Their habits of guiding the ratel, as well as human beings, to bees' nests was first described by Sparrman in the early part of the last century; but so remarkable is the reasoning power displayed in all their actions, as described by writers who have observed them since that time, that even at the present day many newcomers to Africa remain incredulous until they have witnessed the performance for themselves. I have always been as much impressed by the bird's wonderful pertinacity as by its intelligence. It not only asks, but insists, that you shall follow it, and will pursue you doggedly for miles in the opposite direction from that in which it desires you to go, uttering an incessant grating twittering. Although when following it to a nest natives always whistle and croon to it—a custom perhaps originally imitated from the ratel—I have seldom noticed it to require encouragement, and its disappointment and anger are perfectly obvious should you turn and go off in another direction. When trying to get up to game, the attendance of a honey-guide is one of the most annoying things imaginable; all animals, whether ungulate or carnivorous, appear instantly to recognise that its call is indicative of human presence and at once become on the alert. On such occasions, stones hurled at it appear for the moment, but not permanently, to discourage it; it no doubt feels that, given a few minutes to reflect, you are certain to repent of your folly in trying to drive it away, and so decides to give you another chance. It is interesting to speculate how these curious customs of bird, and beast, and man, may have found their origin in the dim recesses of the past.

The various species of honey-guides are parasitic in that they, like the cuckoo, deposit their eggs in the nests built by other birds. The fledglings are provided with hooks on their mandibles, which they perhaps use to turn the young of their foster-parents out of their nursery.

The bright plumaged Rollers (*genus coracias*) are always most conspicuous birds in the African bush. They are bold and confiding, and great consumers of locusts, grasshoppers, caterpillars, and other insects. The handsomest is the Lilac-Breasted Roller (*c. caudatus*), with its bright blue wing covers, and gyrating flight. The European Roller (*c. garrulus*) is a summer migrant to south Africa, and is during that season extremely numerous in the eastern Transvaal, occasionally nesting there.

The Ground Hornbill (*cafer bucorvus*).—These big birds, with their black and white plumage, scarlet wattles, and huge bills, are nearly always met with sooner or later by the traveller, feeding in open patches in the forest, in flocks of from six to about twenty, during the cool hours of the day. Their deep and melodious call of "hoo—hoo, hoo, hoo—hoo, hoo," always heard when they are in the vicinity, is usually most frequent in the very early morning.[1] When disturbed they go away with a ponderous flight, often for a considerable distance, though they never rise far from the ground. At the end of their flight they sometimes perch in trees. They will eat almost anything: snakes, tortoises, small mammals, nestling birds, eggs, grubs and caterpillars are all delicacies. Although not timid birds they are extremely wary. In captivity they become marvellously tame and show extraordinary intelligence, understanding, very much as a dog does, what is said to them. I knew a tame one which would lie down shamming dead, jump up again on its master's word, and by many other indications show that it could grasp his meaning. They are most useful birds in a garden, demolishing all insect pests; but cannot be restrained from immolating little fluffy chickens, which they transfix with their great beaks, toss into the air, and catch neatly in their open mouths. All day they scarcely cease for a moment from uttering a low, monotonous throaty sound, which is quite different from their far-reaching "hoo, hoo."

There are many other hornbills of several genera, all of them arboreal. In the eastern Transvaal, the commonest is the Yellow-Billed Hornbill (*lophoceros leucomelas*), which has a very easily

[1] The female seems to say, "Dŏ take cărę, dŏ take cărę;" and the male answers at once, an octave lower, "Ăll-rīght-Mărў."

distinguished call of "tocky tock, tocky tocky tock," rather like the sound of bubbling water. The female makes her nest in a hollow tree, the entrance to which is sealed up by the male, which afterwards conveys to her her daily food through a little hole left for that purpose. The nest is lined with feathers from the breast of the hen, which moults while sitting, and disposes thus of her cast plumage.

The Carmine-Throated Bee-Eater (*merops nubicoides*) may be mentioned, as it is one of the most brilliantly plumaged birds in south Africa, in its garb of green, crimson, pink, black, and bright blue. Bee-eaters can be recognised by the elongation of the two central tail feathers.

Swallows.—Of these several species are wholly, or partially migrant, while others are resident throughout the year. The Wire-Tailed Swallow (*hirundo smithi*) and the smaller Stripe-Breasted Swallow (*h. puella*), both nest in the eastern Transvaal. The former builds a shallow cup of a nest, constructed of round pellets of mud of about a quarter inch diameter, under the eaves of buildings or rocks. A pair were building under the deck-house of a Nyasa steamer in August, and on the boat leaving Fort Johnston—where she had been lying for some time—accompanied her throughout her voyage up the lake and back. Another pair built under the eaves of my bungalow at Sabi Bridge in February. On 11th April the three young ones were just big enough to look over the edge of the nest. On the 21st, one disappeared, and on the following day a second one was able to go for a short flight. The third was taken from the nest by a grass snake on the 23rd. For the next few days the parents were busy teaching their remaining offspring to fly; they all slept in the nest at night, and the young one often returned by itself during the day to rest.

The smaller stripe-breasted swallows build a very neat mud nest with a long funnel as entrance to it, the inside lined with grass and feathers. A pair occupied the same nest for two successive years under my verandah, bringing out three young ones on the first occasion, about the end of February. About the same time the following year (1908) some accident must have befallen the mother bird, since I found three young ones, nearly ready to fly, dead in the nest.

European swallows, which are present in great numbers all the summer at Sabi Bridge, always roost at night in the reeds on islands in the middle of the river, doubtless for greater safety. They congregate at sundown about the cattle pens, where they are accustomed to hawk flies and mosquitoes, and then all together fly off to their night quarters. During a severe storm in April, when both the

European and the larger stripe-breasted swallow (an African migrant) were collecting previous to departure, it was noticeable that while the former sought shelter under the eaves and in the window-ledges of the house, the latter weathered the storm, thickly clustering in the branches of a tree, their backs to the rain.

Ravens and Crows.—The ravens are represented by the White-Necked Raven (*corvultur albicollis*) in the south, and another and larger kind (*c. crassirostris*) in the north and east of the Ethiopian region. The former is not present in the low country of the eastern Transvaal, except as a very occasional visitor ; but it exists in considerable numbers in Portuguese Nyasaland both in low-lying forest and in hilly country. It is usually seen singly or in pairs.

The Pied Crow (*corvus scapulatus*) is found all over the continent of Africa, south of the northern tropic, and swarms round most of the villages of the interior on the look-out for scraps and refuse. Like the raven, it frees both cattle and game from ticks. Although found in the neighbourhood of Barberton, no great distance away, this bird is scarcely ever seen in the low country of the north-east Transvaal, and I think has only twice been noticed near Sabi Bridge in nine years. On the first occasion a single one came and took a small chicken, and on the second a pair were observed. It associates in couples, and probably the large assemblies sometimes seen round tempting feeding grounds are merely the collection of numbers of such couples.

The African Rook (*heterocorax capensis*) is rather irregularly distributed through Africa. Its habits are not unlike those of the European rook.

The Ox Pickers (*genus buphaga*).—These curious birds live almost entirely on the insect parasities which they pick from the hides of the larger mammals, both wild and tame. They are often known as "rhinoceros birds," from being the constant companions of that pachyderm, which they serve not only by ridding him of ticks, but by warning him of the approach of danger. They of course do the same for any other animals, and are among the difficulties every bush hunter has to contend with. When alarmed, they generally fly up into the surrounding trees, uttering a continuous husky chatter. I have found that their procedure when with tame animals differs from that adopted when with game, for, seated in rows on the back of an ox, they do not appear to pay the least attention to the approach of a human being, whereas in the bush they will fly off the antelopes or buffalo, when one is still some distance off.

Although they are certainly of benefit to cattle, and make no more impression on their hides than they do on those of the wild ruminants, it is otherwise with donkeys, to which they do more harm than good. Not content with picking off the ticks, they proceed to enlarge the little abrasion which the insect leaves behind it, until at last a yawning cavity, streaming with blood, is formed. The least gall or chafe on the withers, or elsewhere, is at once attacked and enlarged, the birds appearing to enjoy consuming the living flesh and blood. Not the least remarkable point is that the donkeys habitually take no notice whatever of the birds, however much they suffer, and make not the smallest effort to get rid of them, being in this way quite different from horses, which will not endure their presence for a moment. Therefore, to keep donkeys in good condition where tick birds abound, requires the most constant watchfulness. In fact, at Sabi Bridge it has always been necessary to employ a small boy, whose sole duty consists in scaring them from the donkeys while at grass.

These starlings can cling to an animal's body at any angle; on the sides, between the legs, even under the belly, and their temporary host, thoroughly understanding what their business is, usually affords all facilities. The birds are able not only to hang on during any movement of the animal, but they can also jump and climb about with marvellous ease. In fact, they can hop forwards, sideways, or backwards with equal readiness, and to attain a lower level simply let themselves drop straight down, the strongly recurved claws gripping the coat at the desired spot.

The species met with in the Sabi-Olifants district of the north-eastern Transvaal is the Red-Billed (*b. erythrorhyncha*), and in my experience it is equally, if not even more addicted to digging holes in donkeys than its yellow-billed cousin, *b. africana*.

Weaver Birds.—These interesting little birds are closely allied to the finches. Many of the species are very brightly coloured, and most are social in habit, building colonies of cunningly woven nests, which are suspended from reeds or branches.

I have found the Masked Weaver Bird (*ploceus velatus*), which builds every year in great numbers near the Sabi, to be a fairly correct prophet regarding the nature of the coming wet season.

About October, their neat kidney-shaped nests may be seen swinging in hundreds, and in all stages of construction, from the ends of reeds and willowy branches, while the busy owners, in their handsome yellow and black uniforms, flit to and fro with much

cheerful chirping and chattering. If the birds are practically all nesting in the river reeds, it is a tolerably certain indication that there are not going to be very heavy rains; but if it is noticed that a considerable number (probably the older ones), are suspending their nests from trees in the bush some distance from the river, floods may be expected, and the younger and more foolish birds will suffer accordingly. In October, 1906, and 1908, I noticed that hardly any nests were being constructed in the reeds at all, and in the following January on each occasion came very heavy rains and floods. In 1907-8, 1909-10, and 1910-11, all very dry years, they built entirely in the reeds.

The young seem all to be fledged by the beginning of March, and I have known them to leave the nests at least a month earlier.

The Sociable Finch (*philetairus socius*), congregates in flocks up to several hundreds. These flocks construct in common one huge nest divided into numbers of self-contained compartments, one for each family of birds. The nests are added to year by year, and attain the size of large hayricks, besides being very solid and heavy. This species does not seem to be recorded beyond the limits of south Africa.

CHAPTER XVIII

REPTILES

Crocodiles—Lizards—Tortoises.

The reptile class includes the crocodiles, turtles, tortoises, lizards and snakes. The members of the various orders agree generally in the low temperature of their blood, and in the outer layer of skin taking the protective form of bony plates or scales. Reptiles belong to an earlier period of the world's history than either mammals or birds, and, organically less specialised than either, their nervous systems and intelligence are also of a lower grade.

The Egyptian Crocodile (*crocodilus niloticus*).—This is the common crocodile of tropical Africa. Its range now extends from the upper Nile, through the rivers and lakes of central Africa, to the Tugela in the south-east. It formerly occurred a good deal north and south of these limits; but at the present day is certainly rare outside of them. It seems never to have existed in the streams draining the south and south-west districts of south Africa outside the tropics. Probably the cool atmosphere of the high southern tableland and of the south coast barred its progress from the east, while the dry countries of the south-west may have offered an impediment upon that side of the continent. It is essentially a lover of tepid tropical waters, and, extended on a sand-bank or rock, delights to warm its chilly blood under the full blaze of the midday sun. Within its range it exists in practically every large stream, and in nearly every tributary and lake. Sometimes large individuals lie at the bottom of the most insignificant pools, wholly, or partially buried in mud, and in such cases their presence would be betrayed only by the spoor on the margin.

The size which crocodiles are ultimately capable of attaining is uncertain. During the first three or four years the rate of growth is fast, perhaps more than a foot a year. As the animal gets older it grows more and more slowly; but when, if ever, it entirely ceases to increase in length and bulk is quite unknown. That they live to a very great age is probable. In most carnivorous animals a

limit is put to pursuit of prey, and hence to life itself, by the wearing down of teeth and claws, which occurs long before the failure of bodily strength has rendered the individual unable to earn its livelihood. With the crocodile it is otherwise. Each of his formidable pointed teeth is merely a shell, and under it, when removed, will be found a new tooth, growing up to replace the old one when discarded. There seems no limit to this dental replacement; possibly it ceases only when the vital forces have weakened from extreme old age. Where a creature so lethargic and low-graded is concerned, these forces are subject to much less wear and tear than among warm-blooded animals, and therefore the period of bodily activity may be much more prolonged. Still, the size attained by crocodiles is no doubt often exaggerated, and measurements form the only true tests. An enormous brute which used to haunt a certain pool in the Sabi was stated to be as bulky as a hippo, and, from one or two glimpses I got of him, I judged him to be not less than eighteen feet long. Eventually I succeeded in shooting and landing him, and the measurements proved him just half an inch under fourteen feet, with a girth of six feet seven inches at the shoulders. The majority of large crocodiles killed and measured in the Game Reserves have averaged about twelve feet over all. In more tropical rivers they may attain a larger size. I shot one in the Lujenda river, and another in the Nile, near the the head of Lake Albert, which I believed at the time to be longer and bulkier than any I had ever seen in the south; but I was unable to recover either, and appearances are proverbially deceptive.

These reptiles are extraordinarily tough and tenacious of life, and, unless killed stone dead, almost invariably manage to slip into the water, when, if not wounded in a vital spot, they probably ultimately recover. Being capable of going for long periods without any food, temporary inability to hunt no doubt inconveniences them in only a minor degree. A shot in the brain is, of course, immediately fatal; but in a crocodile that organ is of such small dimensions that very accurate marksmanship and some knowledge of anatomy is requisite. It may be, however, the only possible target, as, for instance, when the reptile is floating with merely his head above water. Aim should be taken a little behind the eye, when he is side on; while, should he be facing you, a bullet just between the two eyes may at least lay bare the brain, and so prove fatal. When a crocodile, lying at full length on land, presents a side shot, it is generally best to fire right at the middle of the shoulder; this will

very likely pierce the heart, and if it does not, it will at least so cripple and paralyse the animal that time will be afforded for a second attempt. I have killed a great many crocodiles in this way which never moved after having received the bullet. A shot in the lungs, or one which cuts through the valves of the nostrils, or injures the air passages, is also quite deadly; for the animal is then unable to remain under water, and will reappear on the surface within a few seconds. I have known crocodiles wounded in some such way climb right out of the water on to sand-banks they had just vacated, and so offer themselves easy targets. I remember one, shot in the lungs, make three or four successive rushes to land, dashing back again into the water each time he received a fresh bullet. Another, shot, and left for dead on a sand-bank, had disappeared, when, ten minutes later, I returned with some natives to skin him. After a long search we found him about a hundred yards down stream, lying in water some three feet deep. He was unwilling to move, and absolutely refused to show his head above the surface, so, after a consultation, the natives volunteered to go in and spear him. At the first thrust he dashed off down stream, through the shallow water, and a most exciting chase ensued. Luckily for us there were no deep, sanctuary affording pools for some distance, and the natives kept heading him off up stream. He made no attempt to turn upon, or, indeed, to do anything except try to escape from his pursuers. It was marvellous with what speed, in spite of a severe wound from an expanding bullet, he dashed about through the shallows; but eventually he was done to death, and proved to be about eleven feet long. I killed another which had three large spherical bullets embedded in different parts of its anatomy. From the manner in which the tissues had grown up round them, I judged they had been there for a good many years, and there was not the smallest sign of any local disturbance consequent on their presence. There was also in the body a Lee-Metford bullet, probably fired by myself about five months before. This had entered near the root of the tail—of course, missing the backbone—and had more or less raked the animal, without, seemingly, causing him much inconvenience.

In 1902, a native brought in some half-dozen newly-hatched crocodiles. They were only a few inches long, and I kept them for some time in a bucketful of water, feeding them on various insects. Their habits were precisely those of their elders. As they lay floating on the top of the water, a blue-bottle fly would be dropped

within an inch of the nose of one of them. For the space of perhaps half an hour the little reptile would lie like a log, apparently quite unconscious of anything at all. Then, without warning, he would make a lightning dart,and the fly would disappear. A little later, I sent them to the *Zoo* at Pretoria, where they were all reported to have died within a few weeks of arrival, and to have been thrown away on to a rubbish heap. Time passed and the incident was forgotten; but a few years later it was noticed that young waterfowl in one of the large ponds in the gardens occasionally disappeared in a mysterious manner. One morning, when this sort of thing had been going on for a considerable time, a native attendant came rushing up from the place, exclaiming excitedly that "there was a schelm in the water." Investigation subsequently disclosed the presence of a crocodile nearly four feet long, which, without doubt, was one of the youngsters thrown away for dead three years previously.

It is very difficult to catch a crocodile in even the largest gin trap. I have often set these things over baits close to the water's edge; but the reptile almost always springs the trap without injury to himself, and afterwards composedly removes the bait. A native snare—the noose made of wire cable, and all the adjuncts formed of very strong material—has sometimes been successful. On a single occasion we succeeded in poisoning a crocodile at Sabi Bridge, but its custom of stowing its prey away until putrid usually causes the poison to be carried away by the water. They are sometimes shot by trap guns; but I never knew one to be killed outright by this method, and it is difficult to say whether an animal which has escaped into the water is mortally hit or not. I once loaded an old 10-bore musket with a double charge of powder and a handful of shrapnel bullets, and set it over a dead wild dog placed close to the brink of a deep pool. During the night we heard an explosion as of a small cannon, and in the morning it was found that a large crocodile had set the gun off. The latter had been set very low across the line of approach, with a view to hitting the creature in the shoulder, and, there being no marks of shot among the thick bushes facing the muzzle, it was pretty clear that the charge had gone home at a distance of not much over six inches. In spite of this, the crocodile had been able to slip off the bank into deep water, and no traces of him were ever seen.

Crocodiles can remain under water for a considerable time at a stretch: I do not believe that it is known for certain how long; but

their powers undoubtedly greatly exceed those of warm-blooded animals in this respect. If suspicious of danger, or for other reasons desirous of escaping detection, they have a way of protruding just the tips of their nostrils, under the shelter of bushes overhanging the bank, taking a fresh breath and at once sinking. It is, under these circumstances, almost impossible to distinguish them. Their bodies float about forty-eight hours after death.[1]

Through the hot hours of the day crocodiles like to bask in the sun, especially during the winter months, when the water is cold, and the sand-banks and rocks are exposed. In the cool of the afternoon they slip off into the water to seek their prey. Though it is never safe to trust to their habits, they are, generally speaking, most active and dangerous from about two hours before sunset until the same time after sunrise. In the hot weather, when the water is warm, they spend much more time in that element, and its discoloration after rain renders the stalking of prey of all kinds easier. The bad reputation of the lower Pongola in Zululand, is due quite as much to its permanently murky nature as to the number of crocodiles present.

Crocodiles are capable of going for long periods without food. The stomachs of many, perhaps of most, when opened, contain only a few handfuls of smooth, worn pebbles, swallowed to assist digestion. All kinds of remarkable things are sometimes found, such as bracelets, rings, teeth and claws of large carnivora, and so on. I once found ten inches of an impala horn, the thin end having been gradually worn away and digested by the action of the powerful gastric juices. The crocodile's tongue is rudimentary, and unfunctional, the muscle which corresponds to the organ being tied fast throughout to the lower jaw. The food is bolted whole, there being no means for proper mastication, and, no doubt for this reason, is invariably eaten as high as possible. A crocodile at the Transvaal Zoological Gardens refused all fresh meat, and, in fact, eat nothing for over a month; but as soon as his food was offered to him in a decomposed condition, he devoured it greedily.

Fish provide the greater proportion of the crocodile's diet, and their scales are found in the opened stomachs more often than animal matter of any other kind. From a high rock overlooking a clear pool in the Zambezi I once watched a crocodile at work. He lay like a log in the water, perfectly rigid and immovable, until his chance came in the near approach of some heedless fish, when one

[1] Earlier in hot weather.

lightning rush placed the prey within his jaws. During the rainy season, when the tributaries are full of water, the fish generally go some way up them to spawn, and subsequently, as they begin to run dry, the small fry come down to the great rivers in thousands. At the junction of a stream known as the Mutshidaka with the Sabi there is a sand bar, beyond which the water of the latter river is rather deep. I once, during the month of March, watched two crocodiles, a large and a small one, reaping a rich harvest at this point. The shallows of the Mutshidaka, above the sand bar, were swarming with little fish of all kinds, mostly only a few inches long, which were continually being carried down into the Sabi. The crocodiles lay with their bodies in the deep water, and their lower jaws resting on the sandbar in about six inches of water. Their mouths were wide open, and as the shoals swam backwards and forwards they were sucked in wholesale. Every now and then the larger reptile, which, of course, occupied the best place, would make a dash at its companion, and drive it a little farther away; while the latter after retiring for a time, would gradually begin to edge up again towards the special preserve. The lower jaws of crocodiles, unlike those of mammals, are stationary, and it is the upper ones which move up and down. It is thus that their owners are enabled to lie quite flat upon rocks or sand by the water's edge, with their mouths wide open.

In addition to fish, mammals of all descriptions and sizes when in or at the edge of the water are liable to be seized. A favourite method of the crocodile is to lie immersed close to a drinking place either at the brink of the main stream, or of some adjoining pool. Scent, sight, and hearing are all very acute: the moment anything is heard approaching, two eyes, barely showing above the surface, are cautiously protruded. They quietly disappear, and their owner, completely concealed, floats a little nearer. Arrived within striking distance, he waits until his intended victim's head is lowered to drink, when, with a swift rush, he seizes the nose or leg. Having once got their hold, the formidable jaws never relax. However desperately the victim struggles, the advantage which the crocodile derives from the purchase of his feet against the bottom, and his long and powerful tail, is seldom to be successfully disputed, and the water quickly closes over the tragedy. Since the reptile chooses his own ground, the combat must, in the nature of things, always be an unequal one, and though some very large and powerful mammal might conceivably be able to pull a small or medium-sized crocodile out of the water, it is doubtful if it would ultimately escape from the

bulldog grip and cold-blooded tenacity of its enemy. Of course, the crocodile only attacks such animals as it considers itself able to overcome, relative to its and their individual size. Probably the only two species which are quite immune are the hippopotamus and the elephant. The rhinoceros might, perhaps, have been considered large enough to escape attack; but in "African Nature Notes" Mr. Selous relates how one was pulled down and drowned by crocodiles in the Tana, an incident actually witnessed by an American sportsman, Mr. Fleischmann, who was able to take photographs of the incident. Should an animal be on the bank, close to, but not actually in the water, it may be overbalanced and knocked in by a deft blow from the crocodile's tail. I have known both white men and natives to have very narrow escapes in this way, and it is, in fact, never safe to stand less than three feet from the water if there is any likelihood of a crocodile's presence and you are unattended. This is specially applicable to fishing in deep and discoloured pools.

Having drowned his victim, the crocodile next proceeds to dispose of it. Having a deep-rooted objection to fresh meat, he selects some convenient ledge or cavity below water-level, where his food may be stowed until sufficiently ripe to satisfy his taste. The banks of most African rivers are undercut by the current in many places, thereby providing convenient storehouses, at, or near the entrance to which the saurian mounts guard. A story has been related of a native, who, having been seized by a crocodile and half drowned, returned to consciousness, to find himself in a cavern under the bank, but just above the water-line. Immediately above his head the earth had fallen in, and there was a hole through which daylight was visible. Collecting all his energies, he sprang for this, and scambling out safely, though in dire fear of pursuit, arrived at his village, somewhat the worse for the adventure. Here he found further difficulties confronting him, his relatives running away and refusing to believe that he was not a ghost!

Terrible as are the jaws of the crocodile, he does not use them to mangle and tear in pieces live prey, but only to hold it fast; therefore the less the resistance offered the less is the resulting injury from the teeth. I have often found antelopes drowned under the river bank, apparently quite uninjured, until examination brought to light the tell-tale punctures about the nose.

A little boy, fetching water from a pool on the Sabi, was seized and pulled in. The men of the village turned out, and, wading waist

deep in the water along the edge of the bordering reeds, felt with their spears until the body was discovered pushed into a crevice of the bank; it was very little bitten. In face of several persons together, especially if they are making a noise, a crocodile will usually, though not always, sheer off.

The number of natives, who, throughout Africa, annually fall victims to these sinister brutes must be enormous. Within even the small area which comes within my own personal knowledge two or three cases occurred every summer, before the majority of the big crocodiles had been killed off by the rangers. There is a drift on the Usutu River in Swaziland, which used to be haunted by one or more very dangerous crocodiles. During the late South African War a number of men belonging to an irregular corps stationed in the vicinity were accustomed to bathe at the spot, and one young fellow was given to amuse himself when in the water by alarming his companions with a sudden shout of "Look out—croc!" One day this man was sitting on a rock, dangling his toes in the water, when he suddenly screamed out "Croc's got me!" and disappeared. Thinking that it was but a repetition of the well-worn jest, the others merely laughed at what they thought was an unusually realistic piece of acting, when, to their horror, they caught sight of his arm protruding from the water some way down stream. With great promptness and pluck, two men sprang in, swam to the spot, and actually succeeded in bringing their companion ashore out of the very jaws of the monster which was, perhaps, scared away by shots fired from the bank. The man was already dead, however. Not long afterwards, two native messengers had occasion to cross at the same point, the stream being in partial flood, and the water more than waist deep. Both had rifles, and it was agreed that they should cross separately, each, from the bank, covering, with his rifle, the other as he crossed. The first had not got half-way over when he was pulled under, and the precautions taken proved vain, for his friend's rifle spoke to no purpose. A rather pathetic case occurred years ago on the Zambezi. A number of native women were washing clothes, when one of them was seized by a crocodile, which, swimming to a small sand spit, some one hundred yards from the bank, landed her there, fainting, but alive. The other women, though they talked excitedly, made no attempt to run for help, or take any other active step. As it happened, a young half-caste Portuguese came along at the moment, and, grasping the situation, at once jumped into a canoe, and paddled to where the woman was

lying. He had actually covered more than half the distance, when the watchful brute, concealed in the water close by, seized its prey again, and disappeared with her for the last time.

No doubt the dispositions of crocodiles vary much in different rivers and lakes, and the seizing of men and other large mammals appears largely a matter of acquired habit. At Shesheke, on the Zambezi, a paramount chief, who lived some forty years ago, used to derive great amusement from watching slaves and criminals being thrown to the crocodiles, his chair being brought to the river's bank in the cool of the afternoon that he might enjoy the spectacle in comfort. The crocodiles at this place never forgot those halcyon days, and, until very recently, it was almost certain death for anyone to drink at the river, or attempt to draw water, except within one of the protecting screens of logs which were erected for the purpose. Strange natives, unwarned of the danger, were constantly falling victims, as were dogs and other domestic animals. I believe that of late years, shooting by white men has greatly reduced the number of crocodiles, and therefore the danger. On the other hand, there are some large pans in Amatongaland, which, although full of the reptiles, are said to be quite safe to bathe in, attacks on human beings being unknown. Notwithstanding that there are few large villages, situate on the banks of the greater African rivers, whereof at least one member of the community does not bear on his person some sign of a hairbreadth escape from the jaws of a crocodile, it is remarkable how callous natives are in regard to danger from this source. They usually exhibit a much livelier fear of lions, though the actual toll taken by these animals must be the merest fraction of that levied by crocodiles. It may be due to a certain lack of imaginative faculty; the principle that a peril which can neither be seen nor heard must be less pressing than one of which the senses give notice. Whatever the reason, it is undoubtedly most difficult to prevent one's own followers from taking risks in infested streams, and a kind of fatalism seems to render them incapable of learning caution from the loss of a companion, except perhaps for the time, and at the particular place.

One morning I was standing on the banks of the Lujenda River in Portuguese East Africa, watching, with my friend Mr. Maugham, our stores crossing. We had just come to the conclusion that what we had fancied was the protruding nose of a crocodile, was, in fact, only a piece of rock, when a local native who was standing near said "If you will come with me to the village I can show you a big

crocodile." Mr. Maugham electing to stay and superintend the porters cross the river, I went alone with the "boy." The village in question lay but some 300 yards distant and proved to be of considerable size, and full of people, who, at the moment, were in a state of pleasurable and noisy excitement over the arrival of our large caravan. "But surely there can be no crocodile here, with all that noise going on," I remarked. "Oh, yes," nonchalantly replied the guide, "he lives here, and does not mind the people." Sure enough, on reaching the bank, the first thing I saw was a huge crocodile basking at full length, and with his mouth wide open, on a rock not more than twenty yards away. He was not in the least disturbed by the chattering of the women and children, and there was no question of stalking him. It was only necessary to sit leisurely down on the bank and put a bullet through his shoulder, when, after shutting and opening his mouth a few times, he fell off the rock and sank like a stone. The headman was quite pleased, saying that the animal took some one, usually a woman or child, at least once a month. "Why, then," I said in astonishment, having noticed that about every second man seemed to be provided with a firearm of some sort, "did you not shoot it?" "Ah well, we have very little powder, and it is very expensive, and we are poor and require all we have to kill game," was the surprising, though characteristic answer. It is sometimes difficult for a European to even begin to understand the workings of the African mind.

Although a large crocodile, having found a suitable pool well stocked with fish, often remains therein, if not permanently, at least for a considerable period, nevertheless during the rainy season especially, much changing of quarters goes on, and the fact that a pool has been untenanted through one dry season is no criterion that it will be so at the beginning of the following one. When a large crocodile is killed in a pool which he has kept as his own special preserve, it is seldom long before another one, of perhaps slightly smaller size, arrives to take his place. During a heavy flood of the Sabi, I saw a large crocodile being carried down in mid stream at the rate of some five miles an hour. His tail serving him as a rudder, he was keeping his head straight down stream, and making no effort to steer towards the bank. It looked as if he was taking advantage of the flood to effect an easy change of residence.

By night these reptiles often travel great distances overland, but daylight invariably finds them safe in their natural element. At a distance from the latter they are timid, and make for it on the first

alarm. I have heard but one reliable story of any disposition to aggressiveness when far away from water, and this may have been due to fear rather that ferocity. A white man was walking along a footpath by night, preceded by a native boy of some twelve years old, when in the darkness the latter stumbled over a crocodile which was apparently moving along the path in the opposite direction. It immediately seized the boy by the leg; but on the white man, who was not carrying a gun, beating it with a stick, it let go and made off. When quite close to a river or pool, however, much greater confidence is displayed. I have heard of a native, sleeping on a hot night in the doorway of a hut close to the river, being attacked and dragged in. Healy was riding along the bank of the Sabi one afternoon, when his dog chased a monkey into the reeds; a moment later there was a yelp followed by a splash, and that was the last he heard of his companion, which probably had run into a crocodile lying close to the water's edge.

It is certain that when lions happened to have killed anything on the bank, a large crocodile will sometimes come ashore at night and take it away from them. Well protected above by his scaly armour, he is vulnerable to teeth and claws, however powerful, underneath only, while as an offensive weapon his flail-like tail forms a useful adjunct to his terrible jaws. I have heard one reliable instance of a crocodile having been killed in such an encounter with lions, but several of the latter were said to have been responsible. Of course, when caught actually at the water's edge a lion stands no more chance than any other animal.

Always cunning and suspicious, the crocodile at times evinces considerable audacity in the pursuit of his prey. Natives are occasionally knocked off the gunwales of their canoes by a flick from the tail, or a blow from the snout against the side. I recollect Major Gibbons standing upright in the stern of our little aluminium steam launch on the *Zambezi*, with the tiller between his feet, nearly losing his balance through an attack of the latter kind. One day I disturbed a crocodile which had been basking on a slab of rock by the side of a pool. He of course immediately dived, and my two terriers coming up proceeded to drink at the spot, which was about three yards on the left of where I was standing. Presently, to my surprise, I saw the crocodile returning. He was plainly visible in the clear water, floating gently about a foot below the surface, and making straight for the dogs. When about equidistant from myself and them, he cautiously raised his head, no doubt to measure his

distance, and without anticipating the bullet which ended his career. Although he must have seen me plainly, this animal did not take the slightest notice of my presence.

Crocodiles are as partial to dogs in Africa as they are said to be elsewhere; and in the Game Reserves we have lost many faithful friends through these brutes during the past eight or nine years. They are generally taken when in the act of drinking, but not infrequently also when swimming across either on their own account or following their masters. The least taint of blood in the water seems to attract crocodiles instantly, and antelopes, which, pursued by wild dogs, reach the river after having been injured, are nearly certain to escape one danger only to fall into another.

Crocodiles are characterised by a strong musky smell, which often betrays their present or late vicinity. I was standing on a stone in the middle of the Sabi fishing. Close by was a deep pool; but the water was clear, and since two large crocodiles had been successively shot in it, it had apparently remained tenantless. By and by, however, I became conscious that there was a very strong smell of musk in the air, and, though unable to see anything the least suspicious looking, I did not quite like the situation, and made the best of my way to the bank. Next day I shot a ten-foot crocodile on the stone on which I had stood, and no doubt he must have vacated it on my arrival the day before, leaving his strong odour clinging to it.

Female crocodiles lay clutches of several dozen eggs once a year, so far as is known. The eggs are about the size of a goose's, white in colour, and equal at both ends. I have found various numbers, from twenty to fifty, in one nest. They are buried in the sand somewhere close to the water's edge, and the sun's rays are made responsible for the hatching. The depth at which they are buried is variable, occasionally as much as eighteen inches, but ordinarily a good deal less. Eggs have generally been found from the beginning of November up to about the middle of December in the eastern Transvaal. Any laid later would run considerable risk of being washed away by the floods which occur in the early part of the year. The female is usually not far away while the eggs are hatching; but once the young are in the water it is probable that she takes no further notice of them, unless it be as articles of diet. No doubt the youngsters on first being launched upon life find the world a hard one. Not only are birds of prey, tiger-fish, and otters on the look out for them, but they must also go in considerable dread of the larger members of their own species. It is doubtful if more than

one per cent. of each hatching survive to an age when they can not only defy their enemies, but prey upon most of them in turn.

When angry, crocodiles hiss like most other reptiles. At other times they utter a low throaty noise, which is seldom heard unless a night has to be spent close to some of their favourite haunts, such as the reed-bordered and swampy margin of some great lake or river.

Lizards

There are two large lizards of the genus *varanus* found in south Africa. These are popularly described as "iguanas," though the true iguanas are almost all confined to the new world.

The larger of the two, *varanus niloticus*, known locally as the water iguana, is found in reeds and rocks close to the water's edge and, when disturbed, always seek refuge in that element. Though a strong swimmer and diver, it is much less aquatic in habit than the crocodile, and apparently leaves dry land only to seek safety or food. I have seen skins of these lizards which measured, when dry and shrivelled, over six feet long, but in the low country of the Transvaal it is very seldom that individuals measuring more than four feet are met with. The tail is very long and tapering, and the body colours black, yellow, and dark green. The teeth are slightly recurved, not very long, but solid and sharp. The tongue is forked.

When alarmed, the water iguana rushes swiftly towards the stream or pool, which is always close by, crashes through the reeds and leaps into tho water with a resounding splash. It is thus often mistaken for a young crocodile. Its food consists of fish, frogs, crabs, eggs, and the young of birds and small mammals. It is not a climber in the true sense of the word, but can scramble up sloping trunks in pursuit of prey. It is a dangerous enemy to the poultry yard, stealing the eggs and carrying off the young chickens. I have never personally seen a case of a full-grown fowl being taken, but I have no doubt that a large iguana could accomplish this feat without much difficulty. Its raids take place equally by day and night, and extend to a distance of several hundred yards from the water. In 1906 I lost the greater part of a clutch of twelve small chickens, which were carried off one by one in the course of a couple of days. On a hot afternoon I was sitting in my bungalow, when a great cackling arose from the verandah where a hen was tending some chicks. Rushing out, I saw an iguana about three feet long in the act of making off with one of them in its mouth, and ignoring

the hen which was fluttering about in great excitement and pecking at the intruder. My fox terrier, which accompanied me, disposed of the latter with a few vigorous shakes, meeting with no resistance whatever.

These reptiles lay eggs, which are buried in the ground or sand, but at a considerably greater depth than is usual with those of a crocodile. I have seen quite little ones about the end of October, in the eastern Transvaal. To its credit must be placed the fact that this lizard eats the eggs of crocodiles and of snakes as readily as it does those of birds.

The tree iguana (*varanus albigularis*) is very much smaller than the last type. Individuals encountered in the Sabi Bush rarely reach three feet in length. The body colours are fainter than those of *v. niloticus*, and the tail is short and thick in comparison with that of the latter. The dentition is weak, and though no doubt adequate for procuring the natural food of the animal, is of practically no account for purposes of defence. This lizard is found in forest and bush, and among rocks, often far from water. When alarmed, it either takes refuge in a tree, or in some hole or cranny of the rocks. It is a very nimble climber, but its pace on the ground is slow—a kind of shuffling run. Though when brought to bay it makes a great demonstration, hissing loudly and darting its long forked tongue in and out of its widely-opened mouth, while saliva flows freely from its jaws, it seems to have no real capacity for resistance. None of the many I have seen killed by dogs made any attempt either to bite or to spit. I have heard natives say that the saliva is poisonous, but never noticed anything confirmatory of this.

The tree iguana lives on insects of various kinds, birds' and snakes' eggs, the young of the former, possibly the newly-born of some of the small mammals, and carrion. I caught one in a cage trap baited with a dead mouse which, however, he had not eaten. He subsequently refused all food while in captivity for a long time. These lizards attack young chickens nearly, if not quite, as determinedly as their cousins of the last described species, and fowls act in the presence of both much as they do when threatened by a snake.

Tortoises

South Africa possesses several species of tortoises, of which the leopard tortoise (*testudo pardalis*) is the largest, attaining a maximum length of between two and three feet. It is relished by many tribes

as food. This is a land species. The described water types are *sternothærus simiatus* and *palomedusa galeata*. The first named is able to close up the front openings of its shell when head and limbs have been drawn in. The water tortoises have a disagreeable odour, and are less edible than the land types. In the heat of the day they may be seen swimming about in the pools, their snake-like heads occasionally appearing above the surface for air. They reach a length of about twenty inches.

CHAPTER XIX

REPTILES (*continued*)—FISHES

Pythons—Poisonous Snakes—Fresh-water Fish.

Order Ophidia

There are some ninety species of snakes known in Africa south of the Zambezi, of which about twenty-five are poisonous. Many of the forms are, of course, identical with, or only slightly variant from those found in other parts of the continent.

Snakes are all alike in having no eyelids, the place of the latter being taken by a transparent scale, on the same principle as a watch-glass; and they all change their skins periodically, in full grown specimens, generally about once a year. They will habitually eat only prey which they have killed themselves.

While not precisely hibernating in the strict sense of the term, snakes are so susceptible to cold that, during the winter months in south Africa, they remain almost entirely under ground. A hot day may, however, tempt them abroad, and therefore it is, no matter what the time of year, always advisable to keep a sharp look out when walking through thick grass or brushwood. Snakes crawl by alternate movements of the ribs, the heads of which are, as it were, hinged to the sections of the backbone; therefore, on a perfectly smooth surface, such as glass, they are helpless, while a prickly exterior, as that of cocoanut matting, hurts the lower extremities of the ribs and so is avoided.

Some species of snakes are egg-laying, while others bring forth their young alive. The senses of hearing, smell, and sight are, in most species, very well developed. They eat mammals, birds, frogs, lizards, and eggs, and, in the reduction of the swarming numbers of small rodents, are of considerable service to the agriculturist.

Although the greater number of species are non-venomous, it is too much to expect the ordinary layman to be able to discriminate. Therefore, except in the case of such easily distinguishable forms as the blind burrowing snakes of the families *typhlopidæ* and *glauconiidæ*,

which look rather like overgrown worms, most people will consider it always more expedient to be on the safe side.

When in camp, the precaution of shaking out the bedclothes before retiring for the night, and in the morning turning over, previous to donning, the boots and clothes is a wise one. A puff adder as a bed-fellow is an unpleasant companion. Mosquito curtains, always useful, have the additional value of keeping off such intruders. Snakes have the strongest possible objection to the smell of disinfectants, and nicotine is fatal to them. One drop of tobacco oil on the tongue will kill any ordinary sized snake. A rope soaked in carbolic and laid round the tent will always obviate the risk of a midnight visit. This objection of snakes to cross a bar of some substance objectionable to them is well known among the native "doctors." The fowl-house at Sabi Bridge had suffered severely from the nightly depredations of a cobra which always managed to elude capture, and which it was impossible to keep out of the rough shelter of reeds and grass. My waggon driver, who happened to be qualifying at the time as a "doctor," volunteered to stop the marauder, and, *faut de mieux*, I enjoined him to do his best. He then, with considerable ceremony, proceeded to draw a little trench round the fowl-house, in which he scattered some acrid smelling powder, produced from one of the numerous cartridge cases and antelope horns which he kept about his person. He next pronounced a sort of blessing over his work, and, turning to me with a bland smile, stated that the trouble would not recur. Although at the time I secretly ridiculed the whole thing, it is a fact that the snake thenceforth ceased its visits.

The poison of venomous snakes is secreted in glands on each side of the head. When the reptile strikes, the hinged fangs, which normally lie back horizontally along the inside of the jaw, are protruded forward, and the impact on the bitten substance sets to work certain muscles which drive the poison from the glands down a groove or hollow in the tooth into the wound which the latter has made. Clothes are therefore some protection; for even should the fangs penetrate the flesh, a part of the poison may have been ejected at the first contact. On the other hand, at each bite a dangerous snake expels many times the amount of venom needful to his purpose. Leggings and strong boots are effective protections, except against such reptiles as, from their larger size, are able to strike at a higher level. A snake as a rule is able to strike about half the length of his own body above the ground.

In the case of viperine poison, the action on the nerves is, at least among the lower animals, secondary to that on the blood. The latter becomes clotted, both the red and the white corpuscles are broken up, the walls of the small blood-vessels become ruptured, and there is hæmorrhage into the surrounding tissues, which causes discoloured patches to appear on the body. Death, if it occurs in the earlier stages, is due to paralysis of the heart and lungs, caused by interference with the circulation of the blood. Should the patient survive these earlier effects, he is liable ultimately to succumb to blood poisoning. The action of viperine poison is slower than that of the *elapinæ*, but recovery seems to take longer, sloughing and other signs of constitutional disturbance sometimes persisting for a year or more after the accident.

The Mamba (*genus dendraspis*) occurs in forest regions, at low elevations, throughout most of tropical Africa. The species usually found is called *angusticeps*, though a kindred type, from the Transvaal, has recently been described and named *d. mamba* by Dr. Gough, lately of the Transvaal Museum.

The mamba is a large and highly venomous snake, attaining, when full grown, to a length of about ten feet. Above its colour is very dark olive green, verging on slaty black; the underneath parts are white. The body tapers gracefully, and the head is small. Individuals are sometimes seen in which a bright grass-green colour takes the place of the black, and it has been widely believed in the past that the difference was specific. This is now contradicted by scientific experts, who hold that other causes are responsible. While some are inclined to believe that the contrast in colour may be due to environment, others think that green is the colour of the immature snake, and that he darkens with age. The Sabi Bush is notorious for the number of snakes it holds, and there are certainly more mambas to the square mile there than in any other part of Africa with which I am acquainted. They appear to be perfectly constant in colour—*i.e.*, olive black—though I saw a green snake, about eight feet long, with the appearance and unmistakable action of a mamba, take refuge in a leafy tree upon one occasion. The bush aforesaid consists of stunted acacias, interspersed with sun-baked outcrops of granite rock, and there are few cool and shady ravines capable of adequately and permanently sheltering any snake from the strong light. Those who support the theory that environment influences colour, point out that the skin of a dead green mamba, if exposed to the sun's rays, quickly becomes dark; and if this holds good when

the snake is still alive, few individuals in the Sabi Bush would have any chance of retaining the lighter hue. On the other hand, I never remember noticing a black mamba under about seven feet long, and I do not think it would be possible to confuse a small one with any other species of snake, the whole appearance and manner of moving is so specialised. It is conceivable that the young may lead an entirely arboreal existence until they have attained a considerable size, preying on small birds and their offspring. They would thus largely escape attention, and so their universally green colour would not be noticed. Some observers say that the green mamba is a tree snake, while the black one is not. I am in a position, from constant observation, to certify that a black mamba is an extraordinarily nimble climber, and takes refuge aloft as often as in the ground. The truth may perhaps be that while the young are entirely arboreal in habit, some, when full grown, retain an individual preference for the life, and, remaining permanently among the branches of the large and leafy trees which grow near the sand-spruits, retain their bright colour, and in a country such as the Sabi are seldom noted.

Many tales are current of the ferocity of the mamba, and tradition and exaggeration have woven such a reputation round his name that its mere mention is often sufficient to send a shiver even through those who live far from his haunts. I am bound to say that I have noticed in south Africa that the farther people are from anywhere that a mamba is likely to be encountered, and the less experience they have of the snake, the greater is their fear of him, and the more dogmatic their assertions as to his deeds and misdeeds. This is, however, true of all dangerous animals; distance invariably lends a terror to their names. Still, there is no denying that the mamba is to be treated with the utmost respect, and approached with the greatest caution. In the first place, its bite means almost certain and rapid death, and secondly, thanks to its great length, it can strike a man far above the protection afforded by boots and leggings. Its movements, too, are so incalculable and its pace so rapid that it is very difficult to get out of its way, even should it have no aggressive intentions. Fortunately, it is a very alert and watchful creature, early detecting the approach of danger, and at once making with all speed for its hole. Should man or beast be unlucky enough to be between it and that refuge, it will strike desperately in passing, and the results will be none the less serious that the blow has been given in fear and not in malice. When its course lies fortunately in some other direction, it then presents an interesting and beautiful sight.

The slender head is held high in the air, and sweeps forward and sideways as the body glides over the ground in a series of graceful undulating curves nearly at the pace of a horse's gallop. At times nearly half the body seems to be off the earth, and it is this method of progression, so different from the wriggling movements of other snakes, which has given rise to the assertion that the mamba "goes on its tail."

It is found in bush and forest country and amongst rocks. A great deal of its hunting is done among the branches of trees, where it seizes small birds, squirrels, and other arboreal creatures. It glides amongst the twigs, and even from tree to tree, with wonderful speed and ease, and its partiality for shade, when obtainable, is soon discovered by anyone who grows grenadillas or other thick creepers. Ant-bear, porcupine, and other burrows, discarded by their rightful owners, are used as refuges, and therein, as well as in the hollow trunks of old trees, are eggs laid and young born. When searching in the latter places for genets or other mammals, it is always well to take heed lest a mamba be unwittingly disturbed. Rough stony kopjes covered with long grass are almost certain to contain mambas, and caution should be exercised in walking about such places during the hot weather. I was once riding along the bank of a river, and in passing under a thorn tree my hat happened to get knocked off, and fell a few feet behind my pony's tail, so pulling up I dismounted to recover it. On the near side of the animal was the tree which had caused the mishap, while on the off side, about two yards away, lay a large ant-bear hole. Just as I was stooping to pick up the hat there was a rustle amongst the bush and grass lying at the foot of the tree, and out came a mamba, which made straight for the hole, the way whereto took him straight below my pony's belly. When he was exactly underneath it he suddenly caught sight of me, stopped short, and, raising his crest about a foot, looked fixedly at me, the forked tongue darting in and out. It was a very critical moment, for though a shot-gun was in my hands, I could not fire through the pony's hind legs, and the slightest movement on its part would, I knew, mean its certain death. The strain must have lasted for nearly half a minute, and an uncommonly long half minute too, and all the time the pony, an old favourite, trained, like all veld-bred horses, to stand quite still with the reins over its head, stood motionless, calmly masticating a tuft of grass. Suddenly the snake dropped his head, and, making a dive for the hole, disappeared down it, to my inexpressible relief. It is at such

moments that one knows the meaning of "having one's heart in one's mouth."

Another time fortune was less kind. I had brought down my waggon to a point on the Crocodile River about eight miles from Komati Poort, and, the oxen having been outspanned and watered, I rode into the village, meaning to spend the night there. After dark a messenger followed me in, to say that two of the oxen had been killed by a mamba. I went out and found the best leader in the span dead, and one of the after oxen *in extremis*. The former had lived about two hours after being bitten, while the latter survived until the morning in a comatose condition. It seemed that shortly before sunset the beasts had grazed into a patch of long grass, where they disturbed a mamba. The snake immediately charged through the herd, as usual, striking right and left as it went. One ox was struck high up in the hind leg and the other in the shoulder.

A little fox terrier of mine ran in at a mamba which I had disabled, but which was not yet dead. The snake had just strength left to bite the dog in the thigh, and expired immediately afterwards. In view of the former's weak state, I hoped for the best, and picking up the dog in my arms ran for the station, only 200 yards distant. Before I got there he was sick, in a few minutes more quite limp, and in ten minutes from the time he was bitten stone dead! This gives an idea of the rapid action of the poison on a nervous animal. Many years ago the colonel of a British infantry regiment was killed by a mamba in Zululand. He had walked up to a deserted native village—always a likely spot for one of these snakes—to look for a suitable camping ground for his men, when he was bitten in the thigh. Telling the adjutant, who alone had accompanied him, to run back quickly for medical help, the colonel sat down to administer what first aid he could to himself; but when assistance arrived, ten minutes or so later, he was dead. I once had a luckier escape than I deserved from being bitten. As I was walking through the bush a snake of some kind rustled off through some long grass on the left, and I just caught a glimpse of its tail disappearing down a hole. The native with me said it was a python, so I walked up to the hole—a large one—and peered in. I soon saw in the semi-darkness what appeared to be part of a small python coiled up a few feet down the hole, so I fired at it with the little collector's gun I was carrying. Instantly something shot out of the hole like a big released watch-spring, and came within three inches of my leg. It was a mamba. Needless to say I lost no time in placing a certain

amount of distance between us. I suppose he was too much injured by the shot to do more than make one lunge, for on my returning armed with a double-barrelled gun he had vanished down the hole.

Mambas are not, under ordinary circumstances, in the least aggressive, and, in fact, their great object is to escape from man's presence as fast as possible. It is, as with other snakes, the instinct of self-protection alone which prompts them to strike. So-called charges are usually but efforts to get away to some hiding place. I have never seen a wounded one attack, though they often raise their heads threateningly, and no doubt would lunge, if one came close enough to them. In any case, a man armed with a shot-gun, or even a stout stick, ought to be perfectly safe, provided—and there lies the risk—he has time to use his weapon. However, there are exceptions to every rule, especially where wild animals are concerned, and the following is a reliable instance of one: Wolhuter was riding along a native path one day in the summer of 1910. Suddenly, out of the long grass, not ten feet in front of his horse's nose, a mamba raised its crest a good four feet from the ground, and appeared determined to dispute passage. Snatching his horse quickly round, Wolhuter stuck the spurs in and went off at best speed for fifty yards or more, when he pulled up and looked back. He could then see the mamba's head above the grass, its eyes still watching him, and from its position he judged it had come after him for about a dozen yards. In about eighteen years' residence in the bushveld, he said it was the only instance he ever knew of such a thing happening, and no doubt, had it been possible to investigate, some reason outside sheer vice would have been found justifying the animal's conduct.

The female mamba is rather larger than the male, which may be distinguished by its more slender and whippy tail.

The largest individual I ever killed measured about ten-and-a-half feet, and one of that length would, at its thickest part, be of about the girth of a man's wrist.

After the mambas, the most dangerous members of the family are the cobras (*genus naia*), of which there are several species. Their bite is deadly; but as they seldom exceed five or six feet in length, they cannot strike so high as a mamba; nor have they the rushing habits which render the latter so formidable. When excited, they can expand the skin of the neck, thus forming what is known as the "hood." Members of the genus are found all over Africa wherever forest or scrub exists and the climate is sufficiently warm.

The Black-Necked Cobra (*naia nigricollis*).—This is the commonest

species in the Sabi Bush of the eastern Transvaal. The members of it favour as dwelling places the crevices of rocks and the interstices between large stones. A rough-built and unmortared wall is therefore certain to hold a number of them. They are the greatest pests to the poultry yard that it is possible to imagine, and, chiefly on their account, fowls must at night be enclosed in pens entirely covered with fine-meshed wire netting. Even when this precaution has been taken, they have a marvellous knack of discovering the least flaw or hole, and of squeezing themselves through. Having got inside, they proceed to slaughter the fowls wholesale, apparently for the sole purpose of finding out if they are sitting on young chickens in the fluffy stage, for they are not big enough to eat the large poultry, and they do not touch eggs. I have found as many as fourteen fowls dead in the morning, besides all the young chickens that happened to be with them. Often, luckily, the marauder is so bulged out with his meal, that the crevice whereby he entered will not admit of his departure, and so he suffers for his crime. These cobras are also rather prone to enter dwelling houses, perhaps in pursuit of rats and mice; they can get in by ventilators and apertures at some distance from the ground. Thatched roofs are their favourite haunts, and, since the apparition of a poisonous snake falling on to the table or the bed is an unpleasant one, it is always well, when possible, to have cottages in snake-infested countries roofed with iron, or, failing this, to interpose a ceiling of boards or canvas between the room and the roof.

In addition to inflicting a dangerous bite, *naia nigricollis* has also a very unpleasant habit of ejecting venom from its fangs into the eyes of its enemies at a distance of several feet. I had an unpleasant personal experience of this once. I was in a dark outhouse one rainy morning, when I suddenly felt a spatter of moisture first in one eye and then in the other, repeated instantly in the left one. Smarting was followed in a minute or two by intense pain, and complete loss of sight. Fortunately, assistance was at hand, and the eyes were treated continuously for three hours with fresh milk squeezed liberally into them. The clot of blood with which each was covered then came away, and the surface, though much inflamed, became visible. The milk appeared to possess the power of coagulating with, and sucking up the venom. It was a great relief to discover that I was not permanently blind, as I had feared; but bandages were necessary for a couple of days, and blue spectacles for a month. At the end of that time recovery

seemed complete, and then there came a relapse, the left eye, which had received a double dose of poison, giving way, and causing me considerable inconvenience for a long time. The snake, which was killed and skinned during my period of prostration, proved to be a blacked-necked cobra. Wolhuter once had a similar accident, a cobra being under his dining-room table; but in his case the dose of venom was a slight one, and recovery was rapid and complete. Many of our domestic animals, dogs, calves, and, on one occasion, a foal, have completely lost the sight of one or both eyes in this manner, and solitary natives, unlucky enough to meet with such an accident in the bush, far away from water, are said to experience like results.

The Ringhals (*sepedon hæmachates*) is a first cousin of the *naia* group, and, though foreign to the eastern low country of the Transvaal, is well known as a spitting snake throughout the more civilised parts of south Africa. Its bite is dangerous, and it is marked in black and brown, deriving its colloquial name from the white band or bands on its neck.

Viperidæ.

The Puff Adder (*bitis arietans*).—As it is its great quickness and activity which render the mamba so formidable, so the puff adder is dangerous mainly from attributes of exactly a contrary nature. In Africa it is the most deadly and probably the most widely spread of all the viper tribe. It is handsomely marked in a "carpet pattern" of brown and yellow of varying shades. In shape it is short and thick, slow moving and lethargic by habit. The fangs are unusually long, and the bite very deadly. Owing to its sleepy disposition, the puff adder seldom hears the approach of footsteps; and, as it enjoys basking in the sun, stretched at full length across a footpath, the danger of accidentally treading upon it is considerable, if a sharp look out is not kept. When roused, and frightened or angry, it can strike with the speed of lightning, the blow being delivered more or less sideways. It also likes to creep into sheltered corners for warmth, and sometimes is found sleeping in the folds of blankets and clothes in camp. These vipers take no inconsiderable toll of both domestic and wild animals, possibly more than any other kind of snake. When camping out one cold night in June, a favourite Irish terrier, seeking a warm corner to curl himself up in, unluckily chose the winter quarters of one of these brutes, and was bitten in the head. I did not discover what had happened until

the morning, when it was too late to save him, though he lived all that day. Another time two donkey foals were bitten in their pen one moonlight night, by a puff adder, which, presumably, they had curiously sniffed at as he was making his way across. One was already dead when found in the morning, and the other expired in the course of the day. A puff adder often hangs on and worries after having inserted its fangs, and, though the action of the venom is slower than that of mambas and cobras, the depth of the wounds renders them difficult of treatment.

The young are brought forth alive.

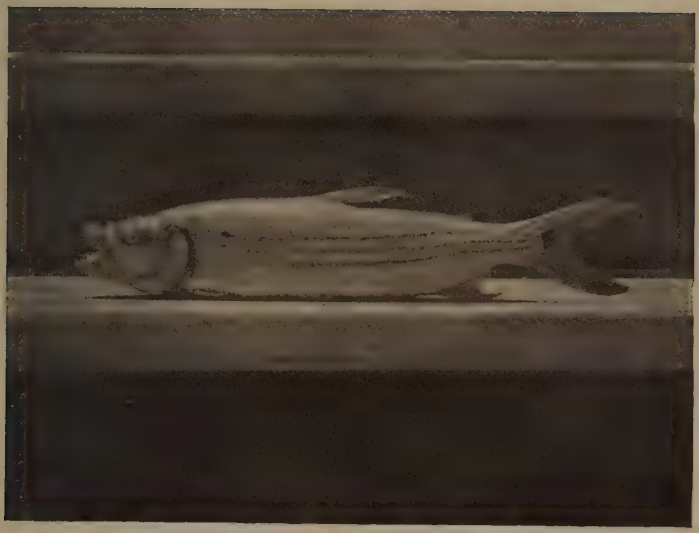
The Night Adder (*causus rhombeatus*).—This is another viper which is very common in south Africa. It is often found in and near dwellings, and, like the puff adder, is so sleepy by nature, that it is liable to be accidentally trodden upon. The bite, though dangerous, is not necessarily fatal, and the reptile, being not more than a foot long, cannot strike very high. I have often seen my cats eating night adders which they had caught and killed.

This species lays eggs.

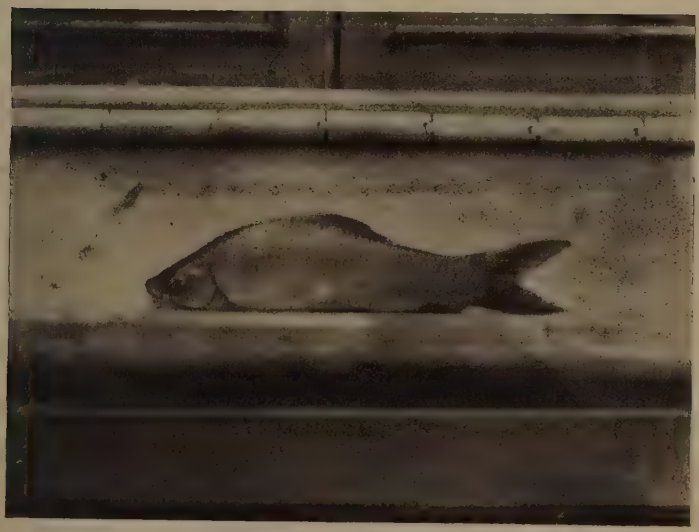
Fresh-water Fish.

A vast field of study and discovery yet awaits the naturalist among the fishes of Africa, and at present there is no work in existence which deals with them comprehensively. This lack of recorded description is in no way due to want of material to work upon, for most of the rivers, lakes, and pools of the continent swarm with indigenous species. Exceptions are some of the rapid-flowing and cool streams which drain the uplands of south Africa; and these, destitute of natural denizens, have been wisely utilised for the introduction of rainbow and brown trout. The experiment was first made, if my memory serves me correctly, in the Mooi River in Natal, about 1890, and so successful did it prove that it was extended to many other streams of a similar character in south Africa.

At the present day very high-class trout fishing is to be had both in Natal and in the Transvaal, and in the latter Province the trout hatchery at Potchefstroom, which receives a small Government grant in aid, produces annually an immense number of fry, which are distributed in suitable waters through the country. The expenditure for 1910 was under £600, and a credit balance was shown. The law forbids the taking of trout by any other means excepting by angling with the fly, and thus due increase is ensured, for in the chosen localities there are few natural enemies to contend with.



Tiger Fish (*Hydrocyon lineatus*).



Yellow Fish (*Varicorhinus brucei*).

Trout in south Africa grow in size and numbers at a rate unknown in Europe. Some rainbow fry were turned into a Swaziland stream in October, 1908, and in November, 1909, Mr. R. T. Coryndon, the Commissioner, landed one weighing two-and-a-quarter pounds, which must be nearly a record in rapid growth. This trout, the first ever caught in Swaziland, is now modelled among Mr. Coryndon's many other trophies of the field. Acclimatisation has also been successfully carried out as far north as British Nyasaland, where the trout have taken kindly to the mountain streams of the highlands near Zomba.

It is said that on the whole the rainbow trout (*salmo irideus*) has been found more suitable to south African waters than the British form (*salmo fario*). On the Mooi River and elsewhere fish of from four to six pounds in weight are constantly taken by anglers. It remains to be seen to what size those turned into the deep artificial lakes and reservoirs near Johannesburg may eventually attain.

European carp have likewise been introduced to many of the dams and reservoirs with great success. It has proved to be a very popular fish in the country, and the Trout Acclimatisation Society receives applications for small fish from all over south Africa. From the Kleinfontein Dam, which was stocked in 1904, several tons weight of carp were captured in 1910.

The Tiger Fish (*hydrocyon lineatus*).—Of all the indigenous fish of south Africa, the tiger fish stands out easily the king. Of slender and graceful build, covered with large silvery scales, ornamented laterally with horizontal black stripes, his fins and forked tail of orange red, his personal beauty is as striking as his boldness and courage. His colloquial designation is not an inapt one. His mouth is armed with truly formidable teeth, set well apart, and fitting into sockets in the opposite jaw. They are conical, sharp as needles, and, in large specimens, fully a quarter of an inch long. His character is in keeping with his outward appearance, for his habits are essentially predatory, and, were it not for the crocodile, he would be chief tyrant of the waters which he makes his home. In all probability, too, he amply revenges himself upon the newly-hatched reptiles for the toll which the larger ones exact from his species.

Found only in the waters of tropical and semi-tropical countries, the favourite haunts of the tiger fish are deep still pools at the tails of streams, whose banks, closely fringed with dense reeds, afford secure ambush where he can lie in wait for, and dart out upon his prey. There is some doubt as to the size attained by tiger fish. It is

said that in large rivers, like the Zambezi, they will exceed thirty pounds weight; but the largest I ever saw caught there scaled sixteen. In the Crocodile River of the Transvaal, where "tiger fishing" has become a recognised pastime, I do not think that the fourteen-pounder caught by Major Greenhill-Gardyne in 1902 has yet been surpassed. The largest I ever landed myself from the Sabi scaled a few ounces under nine pounds.

These fish give the most magnificent "play" when hooked. As soon as one, having taken the bait, feels the prick of the steel, he dashes off in a series of magnificent rushes, bounding again and again out of the water, shaking his head, and using every effort to get free. He will scarcely ever sulk, and should he do so for a time, it is only as a prelude to yet more vigorous action. His teeth debar the possibility of holding him with anything but a specially made cast of steel tracing, and, even when such formidable tackle is made use of the reel must be allowed to run freely, else, if a big fish is in question the top of the rod may go. The method of angling usually pursued is to troll with a spoon bait about an inch long. There must be plenty of small but very strong hooks attached by swivels and rings (no gimp) to the spoon. The mouth of the tiger fish is so hard and bony that it is very hard for a single hook to get a grip, and very careful play is always necessary. Fortunately for the angler, the fish always comes with a furious rush, and gulps the bait at once, when the hooks, as often as not, become fixed in the gills, implying his certain capture provided the tackle does not give way. This last misfortune is quite likely to occur should there be the slightest flaw in the line, tracing or hooks. On the whole, I doubt if there be a fish in the world which for its size can put up so game a fight. A five-pound tiger fish may give from twenty minutes to half an hour's hard play, if one is using a twelve-foot trout rod. How long would it take to land a trout or grilse of the same size, using similar tackle?

When the fish are not hungry, they will follow the spoon and smell at it; it is then a good thing to place a small piece of raw meat or a fish-scale on the tail hook. Raw meat or fish alone is sometimes used as a bait, and I once hooked and landed a small one, using a red salmon fly with silver binding; but though I often tried, I was never again successful in getting a tiger fish to take a fly. Given that they are hungry, numerous, and of fair size, there are few amusements more enjoyable and exciting than the pursuit of tiger fish, and I shall always look back to a day on the Olifants when I

landed a dozen and a half, scaling between two and five pounds, as a red-letter day in my fishing experiences.

The best time to fish is from about half an hour after sunrise up to about ten o'clock, and again from about four o'clock until sunset. During the winter months, when the water is cold, they do not take well, and again, after the commencement of the rains, the discoloured rivers bring down such quantities of food, and render the capture of other finny prey so easy that it is pure chance if they will even notice your bait. In south-east Africa the best period probably is from the beginning of August until the end of October; but sport may be obtained at any time during the hot weather, provided that the water is clear.

However engrossed in his pursuit the angler may become, he must not forget that he is fishing in a pool which probably contains one or more crocodiles. The fact of his not seeing any indications of them is no proof that they are not present and eagerly watching him; so, whether in casting or in playing a fish, it is well to be careful. Wading, even in shallow water, is sheer foolhardiness, and that a man may have done so on scores of occasions with impunity does not alter the case in the least.

Tiger fish usually prefer to kill their own food, which consists of practically everything else that they can overpower, and they are in no sense scavengers or bottom feeders. Meat, to be successful as a bait, should be fresh, as it is the smell of blood which principally attracts them. No doubt they also devour grubs and insects brought down by the stream, but these are always inferior as baits.

Perhaps following the law of nature which controls the too great increase of predatory creatures, tiger fish are seldom found in such numbers as the other species which exist in the same waters. Looking from above into a clear pool amongst the swarms of yellow fish and smaller fry of all kinds, at most two or three large tiger fish, and a few smaller ones, are to be seen cruising about like men-of-war among a lot of merchantmen and fishing craft.

They are excellent eating when above about three pounds weight, but below that size the number of small, and apparently unattached, bones present is a drawback.

The Barber (*clarias gariepinus*).—This curious and rather repellent-looking creature belongs to the catfish tribe. Its enormous bony head, flat and adorned with long feelers, is almost equal in size to the rest of its body. It is one of the best known fish in Africa, and attains a length of four or five feet. Unlike the tiger fish, it is a

bottom feeder, a lover of deep, still holes, with muddy groundwork. It can be caught with any kind of ground bait, and I have sometimes been successful with the spoon, and once with a salmon fly. When hooked, it makes a tremendous rush, which, when a large fish is concerned, strains rod and tackle to the utmost; but after this it usually settles down to sulk, seeking the bottom and burying its nose in the mud. A strain on the line may induce another long run, and it will do its best to tangle the line in any drift wood, weeds, or debris collected under the water. If kept on the move, its efforts soon become less strenuous, and it can be drawn ashore; but, having got it there, the angler's difficulties are not yet at an end. In fact, the barber is one of the most difficult creatures to kill in existence, and the only certain way is to cut off his head. If this is not done, he will probably manage to wriggle back into the water, though laid on the bank yards away from it. The barber is really not very far removed from being an amphibious animal, for he is able to live for hours completely out of the water, and if placed in a bucket or basket with plenty of wet grass, there appears to be no limit to the period he can exist. When the forest pools dry up in the winter, barbers often bury themselves completely in the mud, and hibernate until the next rainy season arrives. Thus quite large bags can be made by digging in pools which contain nothing but mud and ooze. Several species occur in south Africa, of which the above is best known. The flesh is fairly good eating if well cooked; but if merely boiled, it is very dry and tasteless.

The Yellow Fish (*varicorhinus brucei*).—This is the commonest fish of south Africa, and is found in water at all elevations. It grows to a large size, having been taken up to as much as thirty pounds weight on the Vaal River. It is rather a well-shaped fish, with large yellow scales. It is most easily captured with dough or paste, and, though naturally a bottom feeder, can sometimes be taken with an ordinary trout fly. It gives fairly good play, and is good eating. The best time to fish for it is from August to about May. In the Transvaal low country the spawning season takes place during the warm weather and, like those of most other local fish, the majority of the young fry are to be seen about the end of the rainy season.

The above are the only three indigenous river fish worth considering from the sportsman's point of view.

The South African Carp (*tilipia natalensis*) is a small fish seldom exceeding half a pound in weight. It is very good eating. There is also a mud fish (*labeo cylindricus*), a large "sucker" without teeth,

which, so far as I know, will not take a bait of any kind, several small perch-like species, and eels, which are plentiful in some localities, and attain the size almost of congers.

The great African lakes are full of a vast multitude of fish, and a day on Lake Nyasa resulted in the catching of at least six different species, of the names of which, I regret to say, I was, and am, entirely ignorant.

CHAPTER XX

HUNTING NOTES

Seasons—Weapons and Equipment—Attendants—Finding the Way—Tracking—Senses of Wild Animals—Judging Distance—Open Country—Carnivora—Methods of Hunting—Horses and Dogs—Skinning and Disposal of Trophies.

WITH the exception of the high and temperate plateaus of British East Africa, where the season selected for the pursuit of wild animals is relatively immaterial, most of the present-day hunting grounds of the Ethiopian region are situate in tropical and low-lying zones, not only saturated with malaria, but covered, during many months of the year, with grass of a prohibitive height. It follows, therefore, that the intending hunter or traveller must obtain such information, previous to starting upon his expedition, as will ensure arrival on his ground at the most suitable season, alike as regards considerations of health and of sport.

In south Africa the seasons of summer and winter are nearly the antitheses of those obtaining in northern Africa and in Europe; midsummer falls in December, midwinter in June. The first and lighter rains usually fall between the beginning of October and the end of November, while a heavier downpour may be expected from January to the end of March. The above seasons are, however, subject to very considerable fluctuation, the rains being frequently much accelerated or retarded, and in some years failing nearly altogether, while in others, so great is the surplus of water that serious damage to property, and even to life, often results. About the middle of May anticyclonic conditions set in, and thenceforward until the middle of September only a few light showers need be anticipated. The nearer the Equator is approached from the south, the more tardy are the rains; thus, in Nyasaland, and the south part of German East Africa, they fall about a month later than is the case in, for example, the north-east Transvaal. The periods most inimical to health are, of course, those coincident with, and immediately following, the cessation of the wet season, corresponding, that is, to what is known as the "fall of the leaf" in some countries.

On the other hand, the best, most wholesome, and most pleasant time for Europeans, in all countries as far north as roughly 8 degrees south latitude, is from the beginning of June to the end of October. The latter part of the time is the most satisfactory from a shooting point of view, the long grass having then disappeared before the annual fires. When the actual equatorial zone is reached, much less regularity appears in the possession of the seasons. In British East Africa, which lies between 4 degrees south and 5 degrees north latitude, light rains are generally expected in November, and heavier ones in May; but the climate varies much with altitude, and in a manner unwarranted by mere mileage. In Uganda proper, which has an average elevation of over 3000 feet, rain seems to fall almost all the year round, the driest time being between November and May. In the Nile Province of this protectorate, as well as in the southern parts of the Egyptian Sudan, the grass is long, and the showers frequent, between May and December; the ensuing four or five months being, generally speaking, dry and very hot; grass burns, usually, early in December. In none of these equatorial countries is there any period of the year which can be properly described as winter, and the effect of these more or less constantly prevailing summer conditions upon the breeding periods of the fauna, as well as upon the flora, is very well marked. On the whole, the best time of year for the traveller to select for his visit is that within which the least rain may be expected to fall; it is true that the heat is proportionately greater; but, on the other hand, the health conditions are more favourable, and many minor discomforts, inseparable from travelling in the rains, are avoided.

Having selected his goal, and having ascertained the most suitable months for his sojourn there, the sportsman must proceed to the important business of equipping himself with the necessary weapons of the chase. The question of the selection of suitable firearms is well worn, and one upon which it is undesirable to dogmatise. All big game hunters of experience have their own fancies, and the relative merits of small and large bore rifles have been discussed *ad nauseam*.

The following remarks are intended not necessarily to prejudice the novice in any particular direction, but merely to lay stress upon certain points which are not always given prominence in treatises on the choosing of a battery. The motives underlying the selection should be: (1) Security, (2) Humanity, (3) Expense (a factor which in many cases must unavoidably be present). The object of every

true sportsman should be to kill his game clean, and so have his sport with the minimum of suffering to the animal. The small bore has certain advantages over weapons of heavier calibre, such as lightness, high muzzle velocity, flat trajectory, and comparative noiselessness; and in the hands of the expert, that is to say the experienced hunter, who is not only a good shot, but is thoroughly acquainted with the anatomy of the animal he is firing at, is, no doubt, an efficient enough weapon; but against dangerous game which do not happen to be killed by the first shot, and subsequently charge, it has not got the stopping power of a big rifle, and unquestionably its use in inexperienced hands may entail an immense amount of suffering to harmless animals. Since a network of nerves lie near the surface of the body, the larger the external area covered by the bullet, the greater will be the shock communicated. Small bore bullets, which expand only after having penetrated some distance, cause less disturbance than big bore ones, which make a large hole at their entry, and I do not think this disadvantage of the former, is by any means compensated for by their superior muzzle velocity.

The question of firearms should be viewed quite as much through the eyes of the hunted, as from the standpoint of convenience to the hunter himself. Although in killing animals at all, a natural, and not a moral right is exercised, there is still space for the exercise of ethical principles in hunting. For many years the present writer used a ·275 sporting rifle, and a very delightful and accurate little weapon it was; but animals believed to have been clean missed were so often found lying dead, hit in vital spots, at a considerable distance, and with no blood tracks left behind as a guide to the hunter, that eventually it was laid aside for one of larger calibre, wherewith the same contretemps were not found to occur. Sir Samuel Baker wrote, many years ago, at a time when the craze for small bores had not attained to anything like its present dimensions:—

"For sporting purposes the small bore has been universally adopted, but I cannot but think that, like many other fashions, it has been carried beyond the rules of common sense."

The modern small bore magazine rifles from ·303 downwards, have, in addition to their other advantages, that of small cost, and are therefore, naturally, in all the Colonies and Dependencies, employed by settlers to the almost absolute exclusion of all others; but they are primarily man-killing machines, and, even with the adjuncts of split and soft-nosed bullets, are not, in my opinion, ideal weapons against game when used by any other than really skilful

and expert hunters. The aim being to kill with the first shot, this should be taken at the closest range possible, and I do not think the new hand should ever attempt to shoot at anything over 150 yards until he has got confidence in his weapon and in himself. Under these circumstances rifles of not less calibre than ·350 cordite give the best results. If a smaller bore is carried, its use should be confined to animals of the size of duikers and steenbucks.

The battery selected for a six months' shooting trip might consist of one all-round rifle, say a double-barrelled ·350 carrying a 310 grain bullet with 43 grains of cordite, or some other weapon of about the same calibre. A telescopic sight might be taken with this. Next there must be a heavy weapon as a stand-by, ordinarily to be carried by an attendant, and assumed by the sportsman only in moments of actual danger or of potential risk; the heavy double express rifles, from ·450 upwards, which carry a large charge of cordite, are perhaps the most suitable for this purpose. A double-barrelled 12-bore ball and shot-gun, selected from one or other of the numerous types always on the market (some sportsmen prefer a 10-bore for African work, as giving in their opinion better results; but it is a matter of individual taste). If the sportsman is a naturalist as well, he will not forget a light collecting gun, which should, if possible, take ball and shot alternatively. Double-barrelled rifles are, taken all round, more satisfactory for game shooting than magazine weapons; the latter have an awkward habit of jamming at critical moments, and the oil in the bolt has been known to become so clogged after a cold night as to impede the striker and cause a misfire. When expense has seriously to be considered, it is a good plan to look round on the chance of picking up a first-class double rifle second hand. Many of these weapons are brought home and sold back to the gunmakers on the conclusion of an expedition, very little the worse for wear. Magazine rifles are always comparatively cheap, and as a reserve a double 8 bore might be taken, if the sportsman does not mind the weight and the black powder. This rifle is still in the front rank as a weapon for very large beasts and to stop charging animals. Black powder, in spite of its dense smoke and recoil, has the one great advantage of not rusting the barrel, as cordite does, and consequently entails far less labour in cleaning after the day's shooting. The amount of ammunition expended in the course of an expedition, given the hunter to be a reasonably careful shot, is usually very much less than anticipated. On the other hand, of the two evils, having too much or too little, the

former is the lesser. Seeing that on many days no shots will be fired at all, while on others a good number of cartridges will be used, the expenditure from date of leaving railway or steamer until return thereto might be calculated at the rate of three rounds per day for the all-round rifle, of which one-fifth should be solid, and the same amount of shot cartridges (S. S. S. G. in wire cartridge, No. 3 and No. 6); for the heavy rifle, one round per two days, with a hundred rounds as a minimum, and half solid; and about fifty ball cartridges for the shot-gun, if the trip is not to exceed six months. Ammunition should be packed in tin-lined cases made of as light wood as possible, not weighing over fifty pounds and made to *lock;* they should be covered with green ant and rot proof canvas. Spare parts must be taken for all firearms, and the mechanism of the locks and bolts must be thoroughly learned before leaving civilisation.

Two or three good strong sheath knives, preferably of soft steel, should be taken; the ordinary straight six-inch knife used by butchers is as good as any; there should be a flap on the leather sheath to buckle over the haft, that the knife may be retained under any emergency which may arise when in the field. In addition to the knife, a leather pouch should be carried on the belt containing a small steel tape, pencil and paper, a little strong twine, a lancet, and some permanganate of potash crystals in case of snake bite, or mauling by some carnivore. Some first aid bandages, made up in compact form, and stitched to the inside of the coat or shirt, as on active service, is a wise precaution. The watch is best carried upon the wrist. A very good method of carrying sufficient ammunition for one stalk is to have a leather holder for ten cartridges made so as to slip easily on to the belt; one of these can be made for each rifle. The spare ammunition is best divided amongst the gun-bearers, or followers, as if entrusted to one alone the chapter of accidents may cause his absence at a critical moment. A pair of good field-glasses, or telescope, will naturally not be forgotten. Leather knee-caps for stalking prevent the inevitable wearing out of the cloth if trousers or knickerbockers are worn, and the laceration of the bare skin if "shorts" form the nether garment. As to the description of hunting boots or shoes necessary: for quiet walking rubber soles are probably the best, though for more general purposes elk skins are very satisfactory, and do not easily wear out; but everyone has his own fancy in such matters. The nature of the footgear will, of course, too, be largely influenced by the kind of country to be encountered. Should thorns be numerous, strong thick-soled boots are necessary,

while occasions may arise where mocassins will be found best of all. The camera nowadays forms one of the most important articles of every hunting outfit; it should be as handy and light as is compatible with efficiency, and must be carried close up by a reliable attendant. If telephotography is contemplated, a strong stand will be required in addition, for vibration forms one of the greatest enemies of the naturalist photographer in the field.

The sportsman should always have with him at least one reliable gunbearer, a man who can be, to some extent at least, trusted not to desert on an emergency, as well as to see that the guides and trackers do their work, and do not mislead or attempt to deceive the master. The gunbearer should himself be a fairly good tracker and have a tolerably comprehensive knowledge of hunting lore; but his place is always close to his master, and he should on no account be permitted to roam off carrying the second gun, in order that he may "feather" on a spoor, or spy for game, as some are fond of doing. If good local trackers and hunters are available, they should be temporarily engaged, as they are probably acquainted with the haunts and ways of the local animals as well as with all the nooks and corners of the hunting grounds and the position of the drinking pools, besides having more confidence than a native who is strange to the district. A present of meat, if successful, is ordinarily all that is necessary as a reward.

Although it seems doubtful whether the strength of sight possessed by the average native hunter in reality excels that of the average European sportsman, whereas the former's eyes are trained to quickly "pick up" animals at rest in bush or forest, the latter at first, and for a long time after, finds difficulty in locating them until they begin to move; perhaps partly because he does not know exactly what his eyes must seek. That after sufficient practice an ordinarily keen-sighted European can and does see as well as almost any native is indisputable; but, of course, the less the novice relies on his own sense of sight, and the more he leans on that of his gunbearers or his trackers, the slower will be his progress towards proficiency. This applies indeed to forms of bushcraft other than the art of "picking up" game quickly, and to none more than that of "finding the way."

Of all the instincts, that of locality is the one whereto the progress of reasoning powers, and the multiplication of mental attainments among mankind, has apparently proved most fatal. Constant training may make the eyes and ears rival in keenness those of the

savage hunter who has devoted his life to the pursuit of game, but in the matter of retracing the footsteps instinctively to a definite spot in the pathless jungle, the difference between civilised and uncivilised man is strongly marked, and it seems doubtful whether any amount of experience and practice, in whatever degree they may be aided by the exercise of reason and science, can ever fully bridge the gulf. The nomad bushman, gifted with an intuition not far removed from that of the lower animals, confidently wanders through a pathless wilderness, without landmark or visible sign to guide him, to attain his camping ground of a month before. Members of the more highly developed African races, who have been born and bred in the wilderness, though moving about with a confidence and precision startling to civilised notions, are nevertheless immensely inferior in this respect to the wild homeless nomads. Once, indeed, they have become tainted by the influence of civilisation, and have, even for one generation, dropped out of touch with wild life, they are little, if at all, superior to an inexperienced European. It is therefore clear that the instinct of locality (for that it is an instinct no one who has studied the remarkable feats performed by domestic, no less than wild animals can deny) soon becomes, in man, atrophied through disuse. In order that he may become capable of taking care of himself, should he happen to be left alone in a country strange to him, it is incumbent upon civilised man to make use of such adventitious aids as his education and scientific training may have placed at his disposal, which partially compensate him for the natural gifts the loss of which has been the price of his civilisation. With some, of course, a certain rudimentary sense of locality has remained; but it may be assumed as an axiom that no white man can find his way back to a definite spot in the forest by a route strange to him, devoid of landmarks and destitute of paths, by his own unaided instincts, and without some exercise of his reasoning powers.

On setting out from camp in the morning not only should the position of the sun and the time by the watch always be noted, but the quarter whence the wind is blowing, the local landmarks if any, and the lee and weather sides of the trees as regards camp, should be carefully observed. During the march, the number of the streams and native paths crossed, as well as all changes in the wind, must receive due attention. All principal changes of direction should be jotted down on a piece of paper, if time permits, together with the hour at which they took place. It should become a habit, whether

a man is following a spoor, running to keep an animal in sight, or quietly creeping up to his game, to mark mentally the deviations which he makes. Thus he will usually have at the end of the day at least a rough idea of the position of the camp, and, should it be necessary to find his way back alone, there will be a fair chance of getting close enough to it to recognise some landmark, happen on some traces, or hear some sound, indicative of its neighbourhood. In southern latitudes the tyro should remember that the sun is exactly north at midday, and that it crosses the heavens from right to left as he faces it. In taking his direction from the sun he should recollect that the earth is continually moving, and allow accordingly. On a dull day the compass must often be resorted to, its variation, that is, the difference between true north and that indicated by the needle, having been previously ascertained. No matter how well furnished with guides and hunters a white man may be, he should always note which way he is going, and get as much practice as possible in becoming independent. Then, when the day comes, as come it does to most men who stay long enough in wild Africa, on which he finds himself alone in the forest at a distance from his camp, he will have greater confidence in his own abilities than might otherwise be the case.

Many men when they fancy themselves lost at once lose their heads, and begin marching, or even running, wildly in the direction in which they imagine camp to lie; but distracted by agitation of mind, and obsessed by the realisation of their own helplessness, they soon turn back, or in some other direction, so that such chance as there was at the beginning of finding the way back is quickly thrown away. The best course to adopt, should the traveller or hunter find himself alone in an unknown part of the bush, and be conscious of some uncertainty as to his precise bearings, is at once to sit down quietly in the shade of the best available tree, and dispassionately think out the situation through the medium of a pipe. The mere act of sitting down seems to have a sedative effect on the nerves. Having rested thoroughly, an attempt might be made to follow the back tracks; but if this should prove impracticable owing to the nature of the soil or personal inexperience, the notes taken on the way out must be referred to. From these the general direction of camp, and its approximate distance, should be apparent. If note-taking has been neglected, steering with due regard to the sun and wind in some definite direction will at least keep a man from wandering round and round in circles—the fate of so many of the casual and

inexperienced; and even should he be unlucky enough not to hit off his camp, the mere fact of pursuing a definite straight line is almost certain to lead him sooner or later to some sign of habitation or native footpath. If a rough idea of the route has been retained in the mind, and he has walked in the supposed direction of camp about the distance estimated without discovering any indications of its proximity, let the wanderer not immediately leap to the conclusion that he has come too far and begin to hurry in the opposite direction, but rather again rest a little, and then, having climbed a convenient tree or some adjacent eminence, endeavour to pick up landmarks. He should be careful, wherever he goes, to leave behind him as clear a spoor as possible, as his native servants or white companions are almost certain to attempt to follow his tracks before very long. A series of shots might be fired at intervals, and the grass ignited where it will burn, but, if possible, in such a manner as not to obliterate his tracks. If nightfall approaches, and there is still no sign of camp, a good fire should be made up, grass lighted wherever possible, and a strong thorn zareba (or scherm) constructed. Failing this, it is advisable to spend the night in the most comfortable tree that can be found; for in a game country it is foolhardy to take any unnecessary risks, and fires have an awkward habit of dying down during the small hours. But when all is said, each emergency calls for different methods, and the only advice which can be confidently tendered to the man who is alone and uncertain of his way is never to lose his head or become excited, and never to be in too great an hurry. Even should an uncomfortable night be spent far from dinner, tent, and blankets, the morning will generally bring with it fresh hope and new possibilities.

A not uncommon manner of losing bearings when out alone is that induced by following stream beds, especially those dry sand-spruits so common in south Africa. The sportsman starts out from camp alone, possessed with the idea that if he only follows the course of the stream, and returns along it, he cannot get lost. Having walked for an hour or two, nothing seems simpler than to retrace the steps along the bank, and so regain camp, but, unless careful note be taken of all the tributaries crossed, and the pedestrian is careful to adhere to the same side when coming back, it is easy to go wrong, as the accompanying diagram may tend to demonstrate.

In this case, having arrived at the point "C" on the return journey, the bed of the spruit originally followed being clogged, as often is the case, with reeds growing at the junction, the tributary

Diagram to illustrate "Losing the way."

watercourse may have the appearance of being the main one, and the traveller gaily follows it, though it is actually leading him right away from camp. In following these spruits, it is difficult, frequently impossible, to place any reliance on sun and wind as guides, as, owing to the numerous windings, they appear in turn upon every side. Another frequent source of trouble is the endeavour to steer by landmarks. Hills, trees, and other natural features have, in Africa, such a sameness that often a particular object looks exactly like one known to be close to camp, though in reality it is far away and in quite another direction. Indeed, natural features, unless they are very carefully studied, and taken in conjunction with other signs, are apt to be but so many traps for the unwary.

It is a sound plan on leaving camp to agree that three shots fired in rapid succession shall indicate that the way has been lost; and after firing such shots, lighting a grass fire or making some other signal, no movement should be made from the spot for a reasonable time, in order to allow for the arrival of assistance. The distance at which the reports of firearms can be heard varies, of course, according to the wind, the direction in which the shots are fired, the weapon used, and the nature of the country, but in bush country a mile when conditions are ordinary, and two when they are favourable, gives a fair limit. When moving on after firing be specially careful about the clearness of the trail. A few rockets fired at intervals from camp, when it is suspected that anyone is lost, may prove invaluable guides. A mounted man ought never to go far astray, though this has frequently occurred in Africa. A horse, like any other animal, wild or tame, has a marvellously developed local intuition, and, if left entirely to itself, will always bear its rider to some spot which is well known to it, even if it is only to a deserted camping ground; but if it is once decided to rely on the animal's instinct, the latter must be confided in entirely, no half measures will suffice; the reins must be thrown on the neck, and all interference on the rider's part eschewed. If any difference of opinion arises as to the correctness of a certain route, in about ninety-nine cases out of a hundred, the horse will prove right, and the rider wrong. Some horses, no doubt, are better than others, and those bred in the country and accustomed to be turned out to shift for themselves when not being ridden are the best; but all may be relied on sooner or later to bring the rider to a known spot. Of course, when left entirely to itself, the animal cannot be expected to proceed otherwise than at the most leisurely of paces; but, in spite of the tedium implied by this, very little urging

At Gaze.

Elephant Grass.

should be resorted to lest the animal be induced to surrender his guidance to the man. Dogs, unless they are specially trained, are of little use, as they are unwilling to resign their dependence upon their master.

In following footpaths, care must be taken not to confuse them with the well-trodden game tracks, leading nowhere in particular, which are so prominent a feature of hunting countries. An indistinct path is most easily followed by looking some way ahead, when its course through the long grass, or over hard ground, may be distinguished.

In spite of all the risks of the wilderness, and although missing the way has been the cause of the disappearance of many a European in Africa, there is, given a little care and experience, no reason why any white man in possession of normal faculties, should ever be more than temporarily at a loss while walking about by himself in the bush.

Finding the way and getting lost naturally suggest the subject of tracking, or spooring, as it is called in south Africa. Enough might be written on this subject to fill a good-sized volume, and then the last word would not have been said. Its study takes long years ere proficiency may be hoped for; to be a master of the art implies a lifetime spent in doing little else, and, personally, the writer has never yet had the fortune to meet a white man who could take rank as more than a moderate amateur. Among even native African hunters there are but few real proficients, though many individuals of certain hunting tribes display considerable skill. In so far as south and south central Africa are concerned, the old breed seems to be dying out, and very few of the younger generation display marked ability, or promise well. In British East Africa, the Wanderobo are generally said to be the only people who betray any knowledge whatever of the art of tracking.

In hunting in a bush country, which, after all, represents the normal state of things in Africa, spooring is an essential, and upon the ability with which it is carried out depends the hunter's success or the reverse. It is therefore requisite that the best possible native trackers should be engaged; but, while necessarily depending at first entirely upon their abilities, the young hunter should at the same time endeavour to make himself as proficient as possible in the difficult art of tracking, so that he may become sufficiently expert to discover unassisted when dishonest trackers and guides are purposely misleading him. It is questionable whether it is the least necessary or even desirable that the hunter should habitually do the tracking

himself; he should rather leave it to the native or natives whose proper work it is, and who should precede him with eyes bent on the ground. The business of the white man primarily is to be on the alert, the eye searching the jungle to the front and flanks, that he may not miss the often fleeting opportunity for a snap-shot at his quarry as it momentarily pauses at gaze before dashing off. The art of tracking may be learned from the book of nature alone, and only constant practice will teach recognition of the signs. The novice must first learn to distinguish to-day's traces from those of last week, then from yesterday's; this morning's marks from those made at midnight, and so on, until he can tell within an hour when his game has gone by. He must at the same time learn to pick out and differentiate the footprints, so that he may know what description of herd has passed, whether consisting of females and young ones with an old bull, or of young bulls only. To distinguish the species of the game which is being followed by the footprints and droppings is a matter of only a little practice. The few imprints of tracks of various animals which are included in the present work show them as they appear in soft ground, and profess to convey no more than a rough idea of the shape of the under-surface of the hoofs or paws. If spoors had only the distinctive appearance of these impressions upon all occasions, then tracking would be indeed an easy matter; but the problem becomes an infinitely more difficult one when loose sand or hard rocky soil is encountered; where all that is to be seen, is, in the one case, a deep round cavity with a line in the middle of it, and in the other a tiny piece of displaced earth or a pebble or two, of which the fresher looking undersides tell the necessary tale. The droppings are always very good indications of the freshness or otherwise of tracks, and they, too, vary with each species. The grass and branches on each side of the trail should also be attentively studied for signs of recent grazing or browsing, and a broken stick or a piece of half-chewed fodder often forms a sure guide.

Attention must be paid to disturbed dew, or grass withered by having been crushed in the heat of the day. If there has been wind, it may be known whether the tracks were made during its continuance; if it changed at a noted time, it will perhaps be possible to deduce whether the animals passed before or after the change. It is also important to infer from the tracks whether the herd is moving easily, or whether it has been scared, and is travelling at a rapid pace. In the latter case the indentations of the points of the hoofs only will be in evidence, instead of the flat tread of the sole, while

the sand or earth will be roughly displaced behind and at the side; it will, under these circumstances, often be mere waste of time to persevere in the matter further, for when animals are on the alert the hunter will seldom obtain the good opportunities which may be his if he has the luck to come on them when unsuspicious of his presence.

During the cool morning hours animals are generally found more or less on the move, grazing or browsing as they walk slowly along; but as the hot time of day approaches they usually stand or lie down in some cool, shady place, and are then, with the exception of the old cow on duty, comparatively unsuspicious. A herd, having been once startled by injudicious approach, may perhaps trot or gallop away for half a mile or so, and then drop down to a walk; if the hunter does not follow hard on their tracks, but, on the contrary, sits down and rests a little, he may very likely get a chance later, when their suspicions have become lulled. Strong-scented animals, such as buffalo and waterbuck, can, especially under certain atmospheric conditions, be very clearly winded when fairly close at hand, and, should they have been lying down, the "forms" remain tainted for some considerable time. Loose hairs adhering to the grass should always be looked for, as these will definitely indicate the species of animal. The ears should be alert for sounds. The low grunting noises made by some species may be taken as indications of normal, careless ease, while hoarse snorts naturally indicate alarm.

Walking noiselessly on a spoor should become so much a habit that dry sticks and dead leaves will be shunned by instinct, and a heavy tread become unnatural. Natives, while tracking, should be made to remove their sandals, as with these they often make more noise than a white man with his boots. The latter should always carry a rifle himself; to be without a weapon in the hands when following a track, or indeed at any time when hunting, is generally agreed to be a mistake; the gun-bearer should follow close behind with a second gun.

Game is sometimes very difficult to distinguish while standing still in bush, and only practice can teach the art of defining it quickly, so remarkably do the animals fall in with the background. Indeed, the manner in which the brilliant contrast of light and shade in forest harmonise with the markings of the animals, and render them well nigh invisible when at rest, originally induced the belief in protective colouration. Directly one animal is made out—and probably only one of the herd will be seen at first—it should be noted whether or no he seems suspicious of danger. Should he appear to have misgivings,

the shot or photograph, if it is decided to make use of the opportunity, must be taken as quickly as is consistent with efficiency. If, on the contrary, the animal seems at his ease, the native attendants, if they know their business, will immediately efface themselves, while the hunter proceeds to stalk the herd. It is, of course, presumed that the tracks have been followed up wind; to follow any wild animals down wind, except on the chance of their having turned up or across it later, is, needless to say, pure waste of time. The hunter must acquire the habit of crawling on his knees, and dragging himself on his stomach, rapidly and noiselessly, holding and pushing his rifle or camera rapidly in front of him, seeking the shelter of every bush and tuft of grass, and occasionally taking a very careful spy at the position of the animals. Should he be lucky enough to get within easy shot of the herd, and should they be more or less stationary, let the sportsman lie quiet, regain his breath, calm his nerves, and, if shooting is his object, endeavour to pick out the best head. Occasionally, a friendly tree trunk will permit of a gradual raising of the body behind its shelter, whereby the view will be greatly extended. If one of the animals unluckily happens to glance his way while he is visible and moving, it will probably stand as if frozen, staring steadfastly in his direction, while all the others will stop feeding, raise their heads and peer about to locate the cause of alarm. The hunter must now remain as steady as a statue, not so much as blinking an eyelid, even though one leg may be poised in mid-air. If he carries this out to the letter, after two or three minutes of rigid scrutiny the animal will probably glance away for a moment, and he can then get into a more easy position; but it will very likely be a good ten minutes ere it becomes safe to venture another move forward. A few resonant snorts indicate that the animal thinks it time to be off.

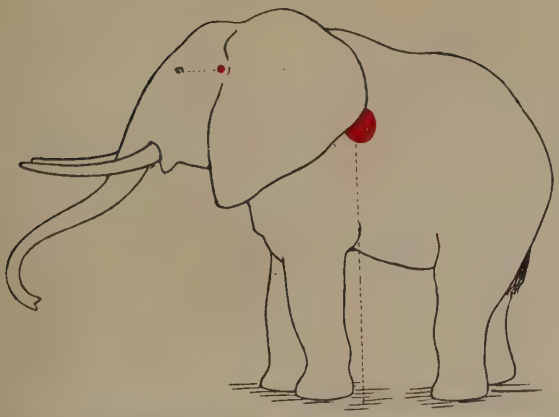
Wild creatures have three methods of detecting danger, scent, hearing, and sight. Of these the first is immeasurably the most important; the merest whiff of tainted air is sufficient to convey to their senses the exact nature and position of the danger, and to cause them to make off without further investigation. The hearing of all the *bovidæ* is also very keen, and at the mere crack of a twig the head of each individual in a herd will go up at once; although if the sound is not repeated, and no further suspicion engendered by the testimony of other senses, the air of confidence is soon resumed, bush noises of an innocent nature being so common as to call for no more than passing notice.

The nature of the eyesight of wild animals, and especially of antelopes, is remarkable. It is obvious, from the experience gleaned in perfectly open countries, that the latter, as well as zebras, are very far-sighted animals, and can clearly distinguish moving objects at great distances; but, quick as they are in this respect, they appear to be quite unable by sight alone to comprehend the nature of a stationary one, even when close at hand. This curious failing may perhaps be set down to their lack of reasoning power, their brains being too undeveloped to realise the nature of the images conveyed to them by the retinæ of their eyes. However that may be, it is certain that if the wind is favourable, and the sportsman stands or sits in a perfectly immovable position, all wild animals, of whatever description, are prone to walk almost on to him, without apparently having the smallest idea of his presence, notwithstanding that they may be gazing straight in his direction. Numberless instances could be quoted to demonstrate the truth of this, and anyone has only to put the matter to the test to prove it to his own satisfaction, though, of course, the slightest tremor or movement on his part is sufficient to create alarm. Even in domestic animals, the sense of sight seems subordinate to that of scent. A nervous dog often shows great alarm if even his own master chooses to test him by approaching suddenly, in a crouching position, or in a stealthy manner, and only becomes reassured through his sense of smell. Whether or no animals are to some extent colour-blind no one can say definitely, but there is a good deal of evidence to support those writers who argue, that, so far as can be judged, they have a conception of dark and light only, and therefore that all colours to them are, according to shade, black, grey, or white, and of these the latter seems the one which is most readily seen when by itself.

The danger having been detected, game has also three methods of evading it. Upon first seeing the enemy approaching through the bush, the animals—unless they have been very much hunted and shot at—usually stand perfectly still, staring intently in the direction of the coming danger, hoping, perhaps, thus to escape notice. That there may be some foundation for this last theory is implied by the action of a very young native child which, left alone by its mother, and subsequently approached by a stranger, will sit as if turned into stone so long as it imagines itself to be unobserved, but bursts into strident howls directly it finds itself discovered. Similarly, wild beasts will remain for very considerable periods absolutely quiescent, their forms exceedingly difficult to

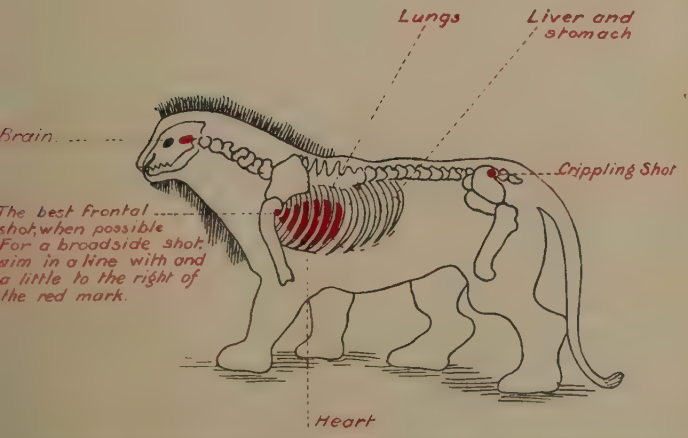
disentangle from the sympathetic background; but as the intruder continues to approach, the animals snort and move uneasily, preparatory to making use of their second means of evasion, that is, flight. Usually the first stampede does not extend over more than a hundred yards or thereabouts, after which individuals of most species stop to stare back for a minute or so, that they may learn the movements of their enemy. Having satisfied their curiosity, they dash off again, once more to halt and look round, each successive stampede being a little longer, and each halt a little shorter than the one preceding it, until at length they depart for good, and nothing remains but a cloud of dust. The third and last means of defence, one only resorted to by most creatures when in desperate straits, is that of resistance. The white man with his rifle risks nothing, but dogs not infrequently fall victims to certain of the more formidable and courageous types of antelopes when at bay or wounded, while natives, too, are chary of approaching very close with their stabbing spears under such conditions.

Although judging distance is not nearly so important in bush or forest country (where the rifle seldom need be used at distances exceeding 150 yards, and the range is often much less) as it is in the open plains, still, in order that the first shot may be immediately fatal, the sights must be adjusted to allow of the bullet striking a vital spot, neither half-an-inch too high nor half-an-inch too low. Every hunter might advantageously carry in his head the idea of what a hundred yards, or a familiar distance, such as the length of a cricket pitch, looks like, from which basis distances intermediate or beyond are easily calculated. As an alternative, he may mentally plot the ground between himself and his mark into five or ten-yard spaces, which will give him a fair estimate of the total intervening distance. In firing, care should be taken not to pull off towards the right, a common enough error when hot or excited, and one for which some sportsmen make habitually a slight allowance. The best place to aim for a side-shot, in the case of most animals, is about the middle of, and a trifle behind the shoulder. If a bullet thus directed goes a little too high, there is a good chance of breaking the neck; if too far back, of still piercing some part of the heart or lungs; if too low, of breaking one or both forelegs; while if too far forward it may break one or both shoulder-blades, and perhaps cut one of the large arteries near the heart. Always allow for the angle at which the animal is standing with regard to you. If an animal collapses in a heap, it



Head Shot.—A horizontal line drawn from the eye to the ear-hole; fire just in front of the latter.

Body Shot.—A perpendicular line drawn from the ground, just touching the elbow; fire rather more than half way up the body.


Lungs
Liver and stomach
Brain
Crippling Shot
The best frontal shot, when possible. For a broadside shot aim in a line with and a little to the right of the red mark.
Heart

The heart lies immediately behind the shoulder. It is nearly covered on each side by the lungs. The latter vary in size, relatively to the other organs, in different species of animals. The stomach and liver lie behind the lungs, at the back of the diaphragm.

is an indication that it is killed stone dead, probably from a broken neck. A headlong rush very likely means that it has been shot through the heart and will be found lying dead within a hundred yards. If, on the other hand, the beast falls stiff like a log, it may be that it has received the bullet too high up in the shoulder, and the spinal column has been slightly grazed, so as to cause temporary stunning. It has happened time and time again that the jubilant sportsman, walking up with empty rifle to such an animal, has had the mortification of seeing it suddenly spring up and gallop away apparently little the worse.[1] So it is always a sound and humane principle to put in a second shot quick, in all cases, no matter what the apparent result of the first one. Always listen carefully for the thud of the striking bullet. When a beast stands stock still at the shot and gazes about it means, most likely, that the bullet has passed over its head, so aim a little lower next time. Should the shot strike low and knock up the dust in front of the animal, it will generally bound away at once. After firing, it is best to remain perfectly still, and to reload instantly, as it is impossible to say what may happen. Note that the first shot is always the best, not only because the quarry is generally stationary, and there is accordingly plenty of time to aim coolly, but because the shock inflicted by any number of subsequent bullets cannot be compared with that of the first one. Nearly all African antelopes are extraordinarily tough, and will go away carrying an amount of badly-placed nickel and lead in their bodies, which would cause complete collapse in most carnivorous animals. So the hunter should take great trouble over his first shot, and try to kill his game stone dead. Much misery and pain is thus averted, while the hunter himself is relieved from the very considerable fatigue and worry of following up and securing a wounded animal.

In quite open country entirely different methods must be pursued. There the game sees the hunter long before he comes within shot, and probably does not at first take a great deal of notice of him. Wind becomes a relatively unimportant consideration; tracking, stalking, all the lore which lends so great a fascination to bush hunting is as nought, and, except for certain elementary precautions to be observed, the result depends solely on the skill of the marksman. In approaching a herd, it is best not to walk straight towards, but rather diagonally across them, gradually drawing in and not

[1] Many a man has lost his life through thus approaching incautiously some dangerous beast believed to be dead.

looking too much in their direction, game being wonderfully quick to note when they are being observed. When, out of the corner of the eye, the best head has been marked, or the herd shows unmistakable signs of getting ready to be off, the hunter should sit down and take a steady aim. Often the act of sitting is the signal for a stampede, when, their backs being turned, the animals may be pursued at a run, the hunter halting and seating himself at the first indication of a check. Shots of marvellous length are often quoted, and many persons seem to take considerable pride in the enormous distances at which they have brought animals to earth. Such practices are not sport, and if a shot cannot be obtained at 300 yards or under, it is best left alone. Even when a telescopic sight is used, no man can make certain of killing his game as it should be killed, namely, stone dead, at what ought to be considered prohibitive ranges. Sometimes quite a good stalk can be improvised by working up under the cover of a quiet old shooting pony to within easy range of a herd. I have known many native and some white hunters make very successful approaches in flat open country by having antelope horns fashioned into a headdress, and then, with the skin of the animal tied round their back, crawling on all fours, and generally simulating the actions of a buck. The bushmen of Cape Colony in the old days, as we know from their drawings, used to get up close enough to game in the open to permit of the use of poisoned arrows, often, it appears, clad in an ingenious garb of ostrich skin, the long neck and head set up in natural fashion, and the little hunter's face peering out of the chest. Game may sometimes be brought up to the rifle in open plains by sending natives a long way round to windward of them, so far away as not to stampede, but only to cause them to move slowly, while the marksman lies concealed in the grass or in some hollow of the ground. The riding down of antelopes on horseback is not touched upon as, under modern conditions, it is too wasteful, and ought not, I think, to be permitted.

In conclusion, the following maxims are presented for the consideration of the inexperienced :

Never shoot unless there is a reasonable chance of killing, which means that a vital part offers itself to the shot, and that the animal is within fair range. The latter, most certainly for the novice, does not exceed 200 yards, whatever the country.

Do not fire at animals on the move, except only in the case of a wounded one making off.

Impala Tracks in Mud and Grass.

Waterbuck Tracks in Wet Sand.

Do not fire when out of breath after a stalk or after running.

Always put in a second shot.

Strict observation of these maxims very often entails the exercise of very great self-control, and frequently the loss of a shot at some coveted prize, but there are certain obligations on the sportsman to which he should not permit the ardour of the chase to blind him. The horrible and utterly unsportsmanlike act of "browning" a herd at a distance is taking as unfair an advantage of animal life to attain the end in view as is cheating at cards.

The practice of shooting meat for porters is often very much overdone, and forms an excuse for much unnecessary slaughter. If the men are provided, as they should be, with a proper supply of grain, or whatever the staple food of their particular tribe happens to be, they require very little meat, for, under the ordinary conditions of their lives, they seldom taste it. It is a mistake to think that there exists any obligation to shoot game specially for their benefit.[1]

The tracking down of carnivora presents greater difficulties than does that of other animals. Their soft pads make far less impression upon the ground than the hoofs of the various herbivora, and their stealthy movements, habitual even when ordinarily making their way through the bush, cause little displacement of grass and twigs. The distances covered by them, too, incline to be relatively great, and depend to a large extent upon the success or otherwise of the night's hunting. Perhaps the very difficulties of the work do but add to the zest of it, and certainly to follow up a predatory beast by fair heel and toe, and eventually to track him to, and shoot him in, his midday lair is one of the most satisfactory forms of African sport that can be enjoyed. The chief labour lies in the tracking, and given that this is done satisfactorily, and due regard paid to the wind and to noiseless moving, it is easier to approach within shot of most beasts of prey than of any other game, with the exception of the pachyderms. The explanation of this, of course, is that the former are generally sleeping soundly through the hot. hours, whereas antelopes and other kindred beasts are generally more or less on the alert at all times. A saving clause must, however, be inserted in the case of the leopard, which is an exceptionally cunning and wary creature, and, moreover, favours such dense covert that it is all but impossible to approach him unawares.

When the feline carnivores have killed something, and have eaten their fill of it, they generally go to the nearest water to drink, after-

[1] Unless of course other provisions are scarce or unobtainable.

wards returning to sleep near what is left of the meat, or, should the latter have been quite finished, not going very far before they lie up for the day. Empty stomachs, however, are prone to lead them many miles, and such sleep as they then indulge in is very light. One of the most successful methods of discovering the presence of large carnivora in the neighbourhood is by watching for vultures. If these birds are seen congregated in any numbers, it may be taken as tolerably certain that there is a kill somewhere about, and if they are perched in numbers on the trees looking steadfastly in one direction, it is reasonable to conclude that the animal responsible for it is lying up somewhere hard by, and protecting his dinner. Frequent howlings of jackals and of hyænas from one spot are sometimes an indication of a bush tragedy. Antelopes snorting and looking steadily towards a certain point, when man is not the object of alarm, may also reveal the presence of a hidden predatory beast.

Generally speaking, there is no particular risk in walking up dangerous carnivorous animals in the first instance, though here again the novice may be reminded that he should never take anything for granted. When one of these beasts has been wounded, however, the position changes, and the very greatest caution must be observed. When disturbed, the larger beasts of prey follow in their actions the lessons of experience. If unused to being shot at, they often display considerable reluctance to move off; but let them once or twice have had the experience of man and his ways, and the superiority of their intelligence to that of the *bovidæ* is quickly patent in the anxiety they exhibit to place as long a distance as possible between themselves and the hunter.

Another method of hunting these creatures is by having them marked down and then organising drives; but this is a plan only feasible in open country where isolated coverts exist. In a bush or forest country it is generally impossible. If a strip of reeds or a patch of bush is to be beaten out, a gun or two should walk upon each side, outside, and a few yards from the covert, and from fifty to a hundred yards ahead of the line of beaters; the remainder of the guns should be placed as "stops." Carnivora will run along in front of the driving line, sticking close to the covert, and will not break until they are some distance ahead, if, indeed, they do not persist in adhering to shelter up to the very farthest fringe. A third system is to shoot a certain number of antelopes or zebras, and to leave their carcases lying at different points, with a view to visiting

them at early dawn in the hope of finding something at the kill. Though occasionally successful, this is not a method to be universally recommended, or one which appeals to all sportsmen. It is a means of destroying carnivora, no doubt excusable where there are immense numbers of certain species of game present, as, for instance, in British East Africa; but on the whole, though it may be pure prejudice, the present writer cannot feel any violent enthusiasm for this form of sport, which implies considerable initial butchery and is often necessarily barren of result. To visit the kill of the beast itself under similar circumstances seems more sportsmanlike, besides offering very much greater chances of success.

In some parts of Africa, where the country is sufficiently open, carnivora are hunted on horseback, and this, in east Africa, has recently become a very favourite method. Since lions apparently soon grasp the fact that they have no chance of getting away from a horse, and realise that they are, so to speak, cornered, they are apt to turn extremely nasty, and this form of chase is consequently a very exciting one. It stands, of course, on a different footing entirely from the practice of tearing along after herds of terrified and helpless antelopes or zebras which has been animadverted upon above.

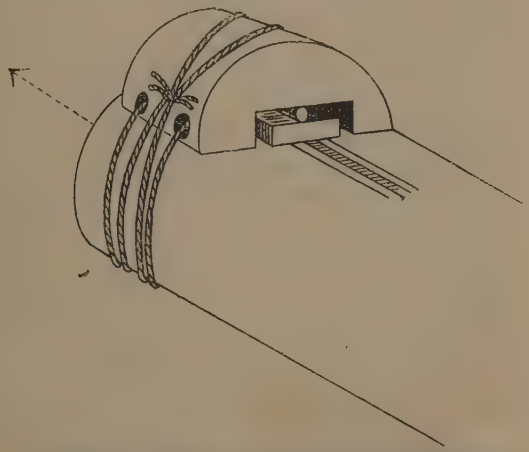
Hunting with a pack of dogs, given the right sort of animals, is a tolerably sure manner of getting on terms with carnivora; in a bush country, indeed, it is perhaps the most certain of all, as the animal can be held at bay until the hunter has time to arrive on the scene. Should the quarry have been wounded, it is a method attended by less danger to human life and limb than are most others.

Sitting up at night presents the minimum of risk, but can be undertaken only in regard to such beasts as are in the habit of returning to their kills; it may take the form of watching either from a tree or from a shelter placed upon, or hole dug in, the ground. The first has the advantage of obviating all risk of the animal winding the hunter, but, on the other hand, the former is often very difficult to distinguish amid the dense shade thrown by the branches, and, moreover, the downward inclination of the shot allows a large margin in favour of missing. If it is decided to watch from a tree, then a good platform of strong sticks must be laid across the forks at not less than twelve feet from the ground, grass spread thickly upon it, and the watcher's blankets spread over all. The experience of sitting up all night in a tree without the aid of these necessary comforts is one unlikely to be voluntarily repeated. Should it be deemed desirable to shoot from the ground, a hole two or three

feet deep, and long and wide enough to permit of reclining and turning comfortably within it, may be dug; a very strong zareba of thorns or stakes driven into the ground must then be built around and over it. Of course, the shelter may be made alone without the addition of the pit. Several suitable apertures should be made in the thorns or stakes, so that a comfortable shot may be taken at any angle. The advantage of shooting from the ground is that it is much easier to see the animal against the sky-line, and also that, from the relative positions of hunter and hunted, the shot is more likely to be effective. The pit is still better is these respects. On the other hand, there is always the risk of being winded, and although no predatory beasts are nearly so nervous by night as they are by day, this is an element which must not be left out of consideration, especially in localities where carnivora have been much hunted. The hunter would do well, on first installing himself upon his platform or in his shelter, to get himself into the most comfortable position possible, and to practise his aims in order that when the critical moment arrives he may be prepared for his shot without the necessity of having to shuffle about, which, with the accompanying noise, might be fatal to his chances. In addition to the rifle and ammunition, a water-bottle, a thick greatcoat, a knife, matches, and some food, are desirable concomitants of a night vigil. A very useful adjunct is an electric lamp or torch. Some sportsmen use a little electric light attached to the brim of the hat, which is worked by a string fastened to the buttonhole; this, if turned on when the rifle is already at the shoulder, throws a beam along the sights on to the object aimed at, and so facilitates success considerably. At night the tendency is to shoot over the mark, and accordingly night sights of large size are supplied by the gunmakers, or can be extemporised by the sportsman himself. A wooden disc, fitting over the ordinary sight, is sometimes used, and a good rough-and-ready method is to tie a small piece of white calico around the muzzle, the knot just over the foresight. In using night sights, the rifle must be lowered until the knot or disc is hidden by the body of the target, when, in view of the short distance, a fatal shot is possible. The presence of a native attendant in the shelter or on the platform is undesirable, as he invariably goes to sleep, almost always snores, and is besides, as a general rule, in other respects, no pleasant companion in such narrow quarters from a white man's point of view.

Although there does not exist in night shooting that element of risk which adds zest to other forms of pursuing dangerous animals,

still there is a considerable fascination about it. The watching and waiting through the long dark hours, alone in the depths of the forest, and far from the camp, while the night breeze rustles the leaves, and a thousand and one mysterious sounds are borne to the ears, possess a weird attractiveness which must be felt to be understood. At such times as this man feels very close to nature; everything about him is so lonely and yet so instinct with pulsing life. The eeriness of the position is accentuated by the tingling of every nerve in the body, as the watcher strains his eyes into the surrounding darkness in search of the approaching stealthy forms of the fierce beasts which are expected. Strange shapes, unseen by day,



Wooden disc tied over foresight, for night shooting.

come and go; night birds flap past on noiseless wings, ever and anon from out of the night comes the sudden screech of an owl, or the long-drawn melancholy howl of a wandering hyæna; while the tree crickets sustain a throbbing chorus of sound which rises and falls with a monotonous regularity. No man has completed his African experience until he has spent a solitary night in the bush.

The following remarks are not intended for the sportsman or hunter, whose only weapon should be the rifle, but for the guidance of the dweller in a wild country who, from his position as an owner of stock, or preserver of harmless animals, is driven to class all kinds of predatory beasts as vermin, and to treat them as such. Carnivora are, so far as I know, outside the pale of the game laws

of all European possessions in Africa, and in many parts of south Africa, at least, substantial rewards are paid for their destruction. In the Transvaal Game Reserves the beasts of prey are at present kept down by all available means, with the exception of the lion, which may be hunted with the rifle only.

The methods of destroying vermin usually employed are traps, spring-guns, and poison. Snares capable of holding large animals are made very cleverly by most natives, and the construction is best left in their hands; but gin-traps and guns should, as a rule, be set under the superintendence of a European. The former should be of the best obtainable metal, double-springed, weighing ten pounds and upwards, furnished with a long and strong chain and, for choice, toothless. The long teeth found on so many gin-traps lacerate the flesh, break the leg-bones, and, if the captive struggles violently, sometimes even tear off the leg or foot, and permit him to escape. Traps are best set at the kill of a carnivore. Should the latter be, for example, a leopard, which is the most cunning and suspicious of them all, great attention must be paid to preliminaries. A circular fence of thorns, strong enough to debar the animal from easily breaking his way through, should be built all round the kill. One, or better, two entrances are left, which should be partially arched over, that they may look as much as possible like natural holes. These arches must be low enough to force the animal to creep through, and prevent all fear of a leap over the trap. Under each arch a small cavity is hollowed out, wherein is laid the trap, the jaws on a level with the surface of the ground, and with sufficient space underneath to ensure free play. The trap having been set, a piece of paper should be carefully laid in the open jaws to prevent grass or sand getting into the springs and impeding the action of the jaws. On this paper is scattered sufficient crumbled dry grass and leaves to completely hide it and the trap, and its immediate vicinity is made to correspond as exactly as possible in appearance with the surrounding ground. The spaces between the edges of the iron and the sides of the archway are then carefully filled in with grass, reeds, or branches, inserted so as to have the appearance of growing naturally, with the object of frustrating any inclination to squeeze past the sides of the trap. The chain must not be anchored to the trunk of a tree or other fixed obstacle, but to a log, or, still better, to a large, cumbersome branch, which will impede the captive beast and ensure an easily followed spoor when he moves away. This weight must be fastened to the chain lengthwise and not across,

for in the latter case it may become immovably fixed in something, and give the animal enough purchase to release himself. The strength of all beasts of prey is very great in proportion to their size, and their struggles on first finding themselves caught are so furious that any fixed opposition will almost always lead to their getting free. All bits of paper, and other unnatural looking objects, must be carefully collected after the traps have been set. A useful precaution is to set a trap-gun inside the enclosure and over the kill, as it often happens that a hyæna or a jackal may arrive before the

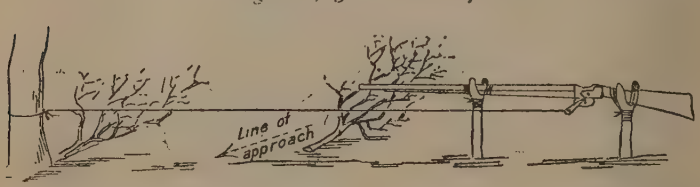
Trap gun set at a kill (muzzle point about 20 inches from the ground).

1. Meat lashed to muzzle.
2 2. Barrel and small of butt loosely attached to forks.
3. Cross piece (ramrod best) lashed tightly to uprights and just touching trigger when the spring is compressed.
4 4. Thorn bushes.

leopard, and, springing one or both of the traps, ensure the latter's safety. It is not in the least necessary to leave all the meat, provided sufficient remains to permit of the beast's sense of smell telling him that it is there.

Spring-guns may be set in several ways. That most generally favoured is as follows:—First build an enclosure round the kill, just as if a trap was to be set, and place the gun pointing through it, the muzzle barely protruding outwards, and well covered in all round with thorns and leaves so that it cannot be grasped except directly

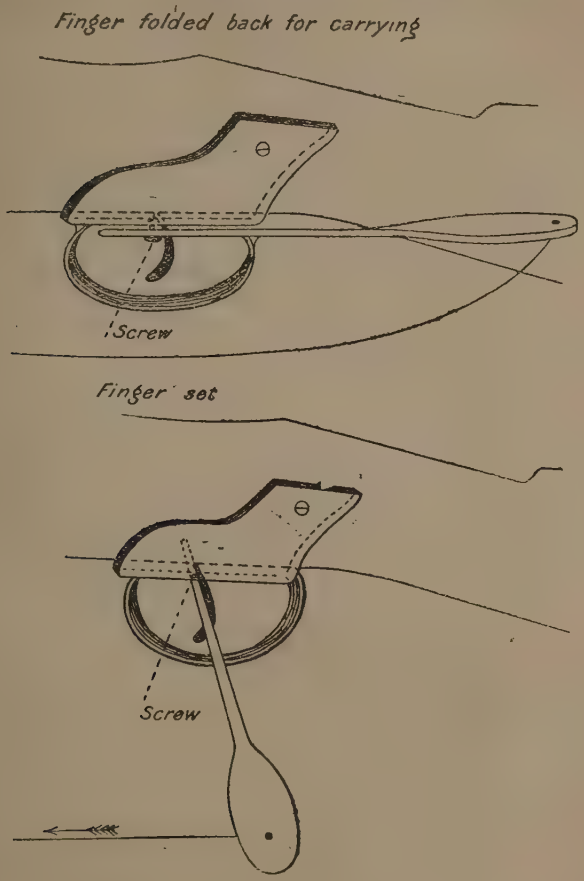
from in front. The gun itself lies horizontally upon two forked sticks, one under the small of the butt, and the other a little behind the muzzle. The angle at which the gun points is relative to the height of the creature it is desired to shoot, the object being that when the latter faces the muzzle the bullet may go down the throat and completely rake the body. For a leopard a good guide is to place the knuckles upon the ground and let the muzzle be about on a level with the elbow, the barrel pointing at an angle of about twenty degrees from the ground. The barrel and small of the butt are then secured to the forks of the supporting sticks by rope or twine, but not so tightly as to prevent the rifle being dragged forward on the forks sufficiently to ensure its discharge. Two uprights are then placed firmly in the ground, one on each side of the trigger, and a strong, straight wand or ramrod lashed horizontally across them, just in front of the trigger when the rifle



is at full cock, so that the slightest pull forward will discharge the weapon. A piece of meat about the size of a man's fist is next placed round the muzzle, which should be exactly on a level with its outer surface, and must be very tightly fastened on with wire or string, so that it cannot be pulled off without dragging the rifle an inch or two forward on the forked sticks. Last of all, and when every part of the mechanism has been carefully tested, load the rifle and cock it.

Another plan is to set the gun with the muzzle pointing across a path which it is intended the animal shall pursue, and along which he should be guided by carefully arranged lines of thorns or other obstacles. In this case the weapon is set, as before, upon two forked sticks, but lashed tightly to them at a height from the ground requisite to shoot some particular species of animal in the shoulder, and not inclined at any upward angle. A small piece of flat wood is screwed on to the stock of the gun, the front edge a little in advance of the trigger; to the under edge, which is about level with

the middle of the trigger, is attached a movable wooden finger about six inches long, the inner part of which lies across the trigger. To the outer end of this finger is attached a long thin wire—string is



FINGER TRAP GUN

unsatisfactory, as it is liable to constriction by night dews or rain—which is led out parallel to and about a foot from the line of the barrel across the path by which the animal is expected, and fastened to a tree on the other side. In order that the shoulder may be struck,

the wire should be on the opposite side of the gun from the direction of approach, to allow of the vital spot coming exactly opposite the muzzle before the wire is touched. The height of the latter from the ground should be such that the animal may breast it or catch it with the upper part of his legs; if placed too low he is liable to step over it, and if too high he will probably notice and avoid it. Instead of the movable finger a small piece of wood may be lashed to the back of the trigger-guard, and the wire, after being attached to the trigger, passed back and round it before being led forward across the path, but this way does not permit of such accuracy of shooting as the other. Trap-guns and poison are both dangerous things to place anywhere near a station or camp, and many a good dog has succumbed to each. Poison, especially, is a thing which ought never to be used except under the most extreme necessity, and unless every bit of tainted meat is carefully counted and picked up every morning the effects may be most far-reaching and disastrous.

In setting traps or spring-guns the hands are best covered with pieces of fresh skin taken from the kill, so as to reduce as much as possible the human odour. The work should be completed as early as possible in the day for the same reason. The meat should be hidden by leafy branches, that the keen eyes of the watchful vultures may not be attracted by it.

Horses and dogs are both useful adjuncts to all hunting parties in regions where it is possible to employ them. The ideal shooting pony should have good easy paces at the walk and the canter; the shuffling pace known in south Africa as "trippling" is the best of all for travelling long distances, with a minimum of fatigue to horse and rider; but the trot is a tiring, unsatisfactory pace in a hot climate. The pony should further be quiet to ride, free from nervousness, a thoroughly good "doer," accustomed to get his head down to the grass upon every possible occasion, and willing to stand still for any length of time with the reins over his head when his rider dismounts. He must not be liable to wander or run away when turned out to graze, and must be used to the reports of firearms. It is an advantage that he should have a fair turn of speed, but as I am not advocating the riding down of game, this is a secondary consideration. The saddlery ought to be of what is known as Colonial pattern, with headstall and picketing rope attached to the bridle, wallets, and good, roomy saddle-bags. Rope or string girths seem to answer best in the veld. A very good way to carry the rifle, when mounted, is to rest the butt in the upper part of the off wallet, the

flap being tucked in and the upper strap drawn tight. The butt, thus supported, cannot sink down into the wallet, and there is no delay in dismounting.

Dogs are most useful for keeping in touch with wounded animals, baying carnivora, and routing them out of covert. They must be sufficiently plucky to follow and harass any wild beast, but must, at the same time, be possessed of enough discretion not to rush in rashly and so meet their death. For this reason bull-dogs and bull-terriers seldom survive long. Fox-terriers, if kept sufficiently in hand, are extremely good, but they are excitable and hot-headed in the presence of game, especially when a number of them are kept, and prone to rush after everything they see. Big, rough mongrel dogs, with a dash of boarhound or mastiff, are excellent. Two or three of such dogs together, indeed, are capable of pinning a leopard or similar beast, and frequently show just the right spirit with lions. Some of the rangers in the reserve have reported very well on Airedales; but the best dog with dangerous carnivora that the writer ever had was a moderate-sized, one-eyed beast, of no special breed, obtained from a native, and it was a sad day when he supplied the dinner for a crocodile. These reptiles, together with snakes, are a terrible curse to dogs in many parts of Africa; indeed, to so many dangers are they subject that our four-footed friends in the wilder parts of the continent are all the time, as it were, upon active service.

There remains to consider the skinning and disposal of trophies by the sportsman. The former should be undertaken as soon as possible after death. If the horns and scalp alone are required the skin should be cut all round the neck, as near the base as it is possible to go; then make a slit upwards along the ridge of the neck to just behind the horns, and from the end of this slit make a separate cut to the base of each. Then cut very carefully round the base of each horn, holding the knife downwards and being very careful not to cut any of the hairs round the burr. The scalp can then be easily skinned off the head, great pains being taken when passing over the eyes, mouth and nose. The ears should be skinned out as nearly to the tips as possible, that is to say, the cartilage separated from the outside skin of the ear, but the former must be cut completely through only very low down in the ear, or the point of separation will show when the head has been set up. After removing the scalp rub it well with salt or alum, or both, putting plenty inside the ears in the bag formed between skin and cartilage.

the skin may then be rolled up and put away for twelve hours or so to let the salt soak well in. At the end of this time take it out and hang it up in the wind in some shady place to dry, ensuring that the air can penetrate to all parts freely. When nearly dry cover it completely inside and out with insect dressing, fold it flat, and put it away, if possible covered with layers of salt, but failing this let it be placed in the air during a few hours every day for a week. The head should be carefully cleaned, and the brain taken out through the orifice at the back of the skull; it simplifies the cleaning process immensely to chop off all the bone behind the horns, but if there is the slightest chance of the specimen proving scientifically interesting this must never be done. Horns become loose after some days, and should then be taken off and the cores sawed through about six inches from the base to facilitate carriage. If the former remain fast, as sometimes happens, then the base must be painted round with some insect-killing preparation. Should the specimen be required whole for setting up, certain measurements must be taken as soon after death as possible, with a steel tape,[1] and the results put down on paper on the spot. Then a cut is made along the skin of the belly from the chin or brisket to the point of the tail, joined by incisions made along the back of the fore and hind-legs. The

[1] Measurements to take if an animal is required for museum purposes:—

1. Point of elbow to point of withers (straight).
2. Tip of nose to root of tail.
3. Tail (exclusive of end hairs).
4. Between horns or ears to middle of withers.
5. Middle of withers to root of tail.
6. Base of ear to edge of shoulder-blade (*scapula*) along side of neck.
7. Point of shoulder (*humerus*) to point of pelvis.
8. Shoulder-point to shoulder-point (across chest).
9. Point of hip to point of hip (under tail).
10. Round throat.
11. Round middle of neck.
12. Round base of neck.
13. Girth of body close behind elbow.
14. Girth of body round middle of barrel.
15. Girth of body close in front of stifle.
16. Girth of fore-leg at elbow.
17. Girth of fore-leg midway between elbow and knee.
18. Girth of fore-leg at knee.
19. Girth of hind-leg at stifle.
20. Girth of hind-leg midway between stifle and hock.
21. Girth of hind-leg at point of hock.
22. Across middle of barrel (straight).
23. Point of elbow to top of withers (straight).
24. Point of shoulder to top of withers.
25. Point of stifle to point of hip.

Note colour of eyes, sex, condition, date and place.

skinning of the head is undertaken as above, except that of course no separation is made around the base of the neck. Leave intact the natural features of the foot. The bones of the legs, including the *humerus* and *femur*, as well as the phalanges of the feet, must be retained, and care must be taken that none of the smaller joint or knuckle bones get lost. The hoofs must be left attached to the skin. If means permit, the whole skeleton may be preserved. For complete details on this subject a book on taxidermy should be studied. For skinning work knives of soft steel, such as the natives use, are best. Skins packed for transmission to Europe should have plenty of naphthaline and salt in the boxes with them, and the heads and skins, each of course with a corresponding number, are best packed separately. The use of arsenical soap is anathema to most, if not all, taxidermists, and no doubt there are many well-founded objections to it; at the same time the experience of many residents in Africa is that it is the only preparation capable of permanently setting at defiance the *dermestes lardarius*, or Bacon Beetle, that most formidable of enemies to the trophy-collector. However efficacious the many preparations variously recommended may be for temporarily preserving skins on a hunting trip, and during their transmission to Europe, when they have to remain for years in tropical countries, arsenical soap well laid on appears to be the only secure safeguard. About 1899 Mr. Wolhuter, now one of the rangers, had a number of small head-skins treated thus, which he put in a barrel and forgot all about until after the war. In 1903 I happened to find them in an old native hut, and, though they had been lying about absolutely uncared for during four years they were in perfectly good condition. A skin not treated at all would in the same district be completely destroyed in less than a month. If the preparation is put on with a good long-handled paint-brush and the hands washed afterwards, there is not the smallest chance of any ill-effects, and the great point is that the paste, once put on, requires no renewing, but retains its full strength for many years.

CHAPTER XXI

TRAVELLING HINTS

Health and African Diseases—Bites of Animals—Routine of Life—Equipment—Food—Clothing—Camping—Surveying.

BEFORE venturing to travel in any of the more unhealthy parts of the African continent a man should make sure that he is physically sound by submitting to a medical examination. The combination of a tropical environment and a rough life has a marvellous way of finding out and accentuating weak points in the constitution, often with the most dire results. The medicine chest should be carefully selected, and the various drugs are always best carried in tabloid form. Generally speaking, the simple, open-air life, combined with the hard work, induces very robust health for at least a considerable time after the traveller has landed in Africa; but let the system become the least bit run down, through chill, over-fatigue, or other cause, and any weak spot in it becomes at once a focus for the bacteria of malarial fever or dysentery, those curses of the tropics. It is, therefore, absolutely essential to guard the health in a manner unnecessary in Europe, and to have recourse to the proper physics on the first appearance of signs which, elsewhere, might well be deemed unworthy of consideration. Stimulants should be partaken of very sparingly, and never before sundown. A timely stiff dram of whisky often gives the necessary fillip to the system, encourages appetite jaded by over-fatigue, and so staves off many an attack of fever: but if spirits are indulged in habitually, beyond a very modest degree, the benefit of the dose is lost.

The first attack of malarial fever is usually the most acute; not only is the patient prostrate with extreme weakness and headache, but he often suffers more or less from severe delirium. A peculiarity of first attacks is the extreme depression which accompanies them, causing many persons to imagine themselves really at the point of death. The recovery is usually as rapid as was the seizure, and the patient is frequently out and about the day after he fancied that all was over with him. Nevertheless, this is but a respite; in two or three days there is a recurrence of fever, and so it goes on, often for several weeks. Subsequent visitations, as a rule, are less severe;

but the longer an individual remains exposed to malarious conditions, the thinner becomes his blood, and the less is he able to withstand the repeated attacks: accordingly he becomes gradually anæmic, nervous, and lethargic, and unless he seeks a temporary change to more harmonious environment is not unlikely to find himself prostrate from blackwater (bilious hæmoglobinuric) fever, a deadly form of malaria. Ordinary fever alone seldom kills, unless the patient's constitution is much enfeebled by ill-health or vicious habits; but blackwater, when neither hospital nor medical attention is available, is very dangerous.

No hard and fast rule can be laid down as to the taking of medicine. Each individual will discover after a time what best suits his own constitution. As a rule quinine should be taken before and after a spasm of fever, while temperature-reducing drugs and laxatives should be the rule during its continuance. Some people who live in the tropics make a rule of taking from 2½ to 5 grains of quinine daily. Others take a large dose, of perhaps 20 grains, once a week. Some never touch the drug unless they are feeling run down. In all cases to take it while the fever is violent appears merely to court additional distress. It is perhaps a good rule, as soon as the patient begins to feel ill, to take a strong purgative; if the fever still persists, phenacetin may be given sparingly in 10-grain doses,[1] and, so soon as the temperature is reduced to normal, frequent 10-grain doses of quinine will be found efficacious. A useful form in which the latter is sold is hydrobromide; bisulphate, after a time, is injurious to the coating of the stomach, and when taken too freely makes many persons unwell. During the convalescent stage preparations of arsenic and strychnine have excellent effect in restoring the tone to the system. When, as often is the case, the fever takes a bilious form, emetics should not be neglected, as the bile has a way of collecting in the stomach and impeding the digestive process. Often an emetic taken at the right time has a marvellously recuperative effect, the stomach having been previously filled with hot water or other liquid. Some people find Warburg's tincture very efficacious; it should be taken with a little whisky or other spirit on an empty stomach. Chicken-broth, beef-tea, and boiled milk are the best foods for a man down with fever, and so soon as the disease has spent itself he should get up and endeavour to move about as much as possible, as well as to interest himself generally, when he will be surprised how quickly he shakes off, for the time being, the feeling of "lowness."

[1] If the patient's heart is sound, it is useful merely to induce perspiration and so relieve distress. It has no effect on the course of the disease.

For blackwater fever frequent doses of salicylate of soda are recommended. The stomach should be cleansed, and nourishment—milk and soda, diluted champagne, beef-tea, and eggs beaten up with brandy—given at short intervals. The patient often dies from sheer weakness after the fever has gone. Heavy doses of quinine, when the patient is unaccustomed to the drug, are believed by some authorities to have an effect on the system predisposing to this malady.

Malaria is carried, it is now well known, by mosquitoes of the *anopheles* family, which may be distinguished from the commoner *culex* by the sharper and thinner note made by their wings when flying, as well as by the fact that, when at rest, they have the appearance of standing upon their heads. Mosquito-proof houses are only perfectly effective if the doors and windows are kept permanently shut from before sunset until some time after sunrise, and this being seldom practicable, mosquito curtains should be used on the bed, and must always be tucked in carefully under the mattress, and on no account left to hang down to the floor. The underside of a mattress is a very favourite day-haunt of the insects, which, under the latter method, find themselves within the curtain at night. In camp the tents should be shut up at least half-an-hour before dark and remain so until the traveller is safely in bed under his guard. It is wise to avoid the immediate neighbourhood of native villages. The germs of malaria are now known to be present in the blood of all natives of fever-stricken areas, and especially in that of young children, and it is from these reservoirs that the *anopheles* mosquito draws the poison which it conveys to the European, or unacclimatised stranger. A few hundred yards is probably the limit of the insect's range and therefore the danger zone is comparatively restricted.

Dysentery is probably derived in most cases from imbibing the germs of the disease in drinking water. Therefore it is a good rule to have all water required for next day boiled overnight. Drinking vessels and water-bottles should be scalded daily. Filters are sometimes considered to be merely harbourers of germs. Ipecacuanha is the usual medicine for dysentery, and during the continuance of the disease the diet should be restricted to milk entirely. I have seen natives down with dysentery thrive quite well on pumpkin stew, well boiled down, no milk being available.

For complete information on medical as well as other matters pertaining to his proposed journey, the intending traveller should not omit to include "Hints to Travellers," published by the Royal Geographical Society, in his outfit.

Snake bite is a danger against which the African traveller must always be prepared, whether in his own person, or in that of one of his followers. A little permanganate of potash, a lancet, and some string, should be carried on every belt. Antidotes are of no use if not instantly available: therefore must not be left behind in camp. Immediately on any one being bitten, the wound must be lanced at deeply as possible—the cuts running parallel with the tendons—and a number of grains of permanganate of potash pushed far in, or a strong solution injected. A couple of ligatures of string or cloth must then be put round the limb, one above the other, between the wound and the heart, and twisted as tight as they will go with a stick or ramrod. If the heart shows signs of weakness, stimulants may be given in moderate quantity, or ammonia, sufficiently diluted, may be taken internally, or preparations of strychnine injected under the skin; but none of these things are antidotes to snake poison. The main thing is to act with the permanganate and ligatures immediately. The latter should not be left on more than about an hour. The parts about the injury should be lanced so that the blood may flow freely. For later treatment, a supply of properly prepared snake serum should be carried with the expedition, and injected subcutaneously directly the patient arrives in camp. Certain snakes of the cobra family, common in Africa, have the power of injecting their venom over some considerable distance into the eyes of their enemies, thus setting up inflammation so intense as often to injure permanently the eyesight of the victim unless attended to at once. A very weak solution of permanganate of potash, or alternatively fresh milk, injected into the eyes until the inflammation begins to subside is the best remedy for this painful and dangerous accident.

The sting of a scorpion, though seldom, if ever dangerous, nevertheless causes a great deal of pain and discomfort. These insects being generally found hidden beneath stones and logs of wood, the fingers are usually the members to suffer. A rather favourite haunt of the disagreeable little creature is the underside of the pillow or mattress. Ligatures and permanganate of potash may be applied as in snake bite. Centipedes and tarantulas form other minor drawbacks to camp life in tropical Africa during the rainy season.

Other wounds, such as those inflicted by the teeth and claws of carnivorous animals, which are often exceedingly septic, should be treated by washing and syringing them out thoroughly with strong disinfectants as soon as possible, and then bandaging.

Some knowledge of first-aid is indispensable. The traveller should

know how to set and bandage a broken bone, reduce a dislocation, and tie up a wound, as a matter of course. He must also know how to restore a partially drowned person. It is very useful, too, to understand the correct method of pulling out a tooth, skill in this direction being sometimes greatly appreciated by natives. Plenty of bandages and antiseptics must accompany every medicine chest.

The method of living adopted influences the general health of the traveller in Africa in a very high degree. Much of the sickness and mortality amongst pioneers, prospectors, and hunters in the past may be directly traced to the rough mode of life pursued. In those days it was impossible to live in the interior of the continent otherwise than under semi-primitive conditions; but at the present day, with improved transport facilities and general opening up of the country, coupled with a better knowledge of how to live under unhealthy conditions, "roughing it" ought to be to a great extent unnecessary.

Although the selection of as good a cook as possible is an important task, the traveller should himself have some idea of how food ought to be prepared, that in the event of the cook being at any time unable to perform his duties he may be able to direct the efforts of the untrained natives who must perforce carry them on. It is remarkable how quickly Africans, especially young boys, pick up rough cooking, and how relatively expert they become if properly trained. Their weakest point, generally, is want of cleanliness in the kitchen, and this must receive special attention. The writer recollects long ago having a cook boy who pleased him much by the excellent manner in which he cleaned the plates, an approval which was considerably tempered when it was discovered that the tongue was the instrument used. The food must necessarily be plain, but it should be well cooked. Underdone meat is dangerous in Africa, owing to the frequency of parasites. The flesh of all animals shot should on this account be examined before being sent to the kitchen, especially when the beasts are in poor condition. The quantity of meat necessary to the system in a cold country is absolutely deleterious in the tropics, where twice a day, when working hard, and once, when leading a sedentary life, is quite sufficient. When travelling, the time of meals is best arranged to suit the marches. Perhaps the best arrangement is to have something light, tea or coffee, and bread or biscuits, with porridge if desired, before sunrise, while the attendants pack up the camp. This permits of an early start, and a march in the cool hours of the morning. A halt can be made about

A Semi-permanent Camp.

Tea in Camp.
(Mr. R. C. F. Maugham.)

11 a.m. for a few hours, when a more elaborate meal can be eaten, journals written up, observations taken, and so on. The march may be resumed as late in the afternoon as is compatible with the distance it is desired to cover, always allowing, if possible, one clear hour of daylight after halting for the night, that camp may be selected and pitched satisfactorily. Nothing is more uncomfortable than having to camp in the dark, and avoidable discomforts should be carefully shunned—the necessary ones being quite common enough. Tea should be got ready on halting; it is an excellent pick-me-up when tired, and while it is being drunk the tent can be pitched and the hot bath, which should never be omitted after a day's march, got ready. By the time the traveller has bathed and dressed in a dry suit of clothes, the marching apparel having been sent to be hung up before a camp fire, the sun will have set, and in a mosquito country he will get under his table net and will find that he is all the better for a whiskey and sparklet and cigarette to keep him company until dinner is announced. After the latter important function and the ensuing pipe, he will probably, unless observations have to be taken, be glad enough to retire to his camp bed.

If a day's hunting is contemplated it is often best, instead of the light repast eaten before the ordinary march, to partake of a fairly substantial meal, it being often inconvenient to carry anything very elaborate in the way of food when hunting, and quite possible that camp may not be reached until after dark. In all cases it is the golden rule in Africa never to go out in the morning, under any circumstances whatever, on an empty stomach. It is best to confine all liquid refreshment taken before sundown to tea, coffee, cocoa, or lime-juice; the latter, drunk with the addition of the universal "sparklet," is most refreshing after the midday march. Indeed, the feeling experienced as the tired pedestrian, having flung himself into his deck chair after a long hot march, sees his white-robed servant approach, bearing a long tumbler of the cooling drink, is, for pure luxury, hard to beat. After sundown, alcoholic refreshment is beneficial in moderation. A *very* small "tot" of absinthe with a big bottle of soda or a long "sparklet" has a most reviving effect. Light clarets and hocks are excellent adjuncts to the dinner table. A little champagne should be carried as a purely medical comfort. It is most useful in helping to set up a patient after an attack of fever. The accessories of the dinner table should not be neglected: the jaded appetite is stimulated amazingly by the prospect of a clean white cloth, serviette, and shining knives and forks. The native

servants may even be trained to pick any stray wild flowers near the camp, and place them on the table. These small things may sound superfluous, but in reality they often make just the difference between lassitude and disgust, with consequent sickness, and that cheerful contented frame of mind which implies health. The physical comforts deserve far more attention in the wilds than in civilisation.

Those who have not had to tramp on foot for hours under a tropical sun can but imperfectly appreciate the luxury that a plunge into some cool river or pool implies to the weary traveller. Nevertheless it is a luxury which must be indulged in with discretion, both as to time and place. Many authorities are emphatic as to the danger of bathing in the open during the heat of the day, and no doubt if a European does so, he must make due provision against getting sun-stroke. I must say that, personally, I have always bathed at any hour of the day that happened to be convenient, and have experienced ill effects only when entering the water too late in the evening has induced a chill. Perhaps the best time is about an hour before sunset, when the air is still sufficiently warm to obviate this risk with its consequent dose of fever.

The place must be selected with even greater care than the time. Those cool, alluring depths under the rock, overhung by delightfully shady bushes, are almost certain to be the haunt of a crocodile; and in fact no river or other outside bathing is safe in tropical Africa, unless the pool chosen is clear enough to permit of previous careful investigation, and is furthermore surrounded by shallows, which serve to render the unseen approach of the reptile impossible. Even small and isolated forest pools are not always safe, and the banks should be carefully searched for crocodile spoor before the bather trusts himself to them. In the light of later experiences one often shudders at the risks which, full of the valour of ignorance, one used lightheartedly to take. A number of persons bathing together are generally safer than one alone, the crocodile being a cowardly brute: but this cannot always be depended upon as a safeguard, a truth which many unfortunate persons have realised when too late.

A good double fly tent, weighing, with the poles, about 50 lbs., is the most suitable for ordinary expeditions. The fly may have a front extension to form a sort of porch over the doorway; a bathroom annexe will make up another half-load for a porter. The fly can be used as a shelter when short trips are undertaken from the standing camp, and it is desirable to reduce transport. Green rot-proof canvas has the advantage of resisting the attacks of white ants, and in all

standing camps packages made of wood, cloth, or leather should either be placed upon ground sheets composed of this material, or raised above the level of the ground upon platforms; otherwise the termites may work untold havoc with both cases and contents. Deck chairs are the most convenient form of lounge; requiring no putting together, they are available at a moment's notice either upon arrival in camp, or during a temporary halt on the march. Portable camp furniture of all kinds can now be obtained weighing only a few pounds, and is of excellent quality. A folding bed, washstand, bath, table, and chair are the main items. It is not a bad plan to take a tin bath with a lid, and carry inside it, on the march, all the toilet necessaries, a change of clothes and so on, in order that the things wanted first in camp may be the most easily got at. A couple of lanterns constructed to take either oil or candles are essential, and an electric lamp is very useful in cases of night alarm. The cooking utensils are best made of aluminium, and a couple of good camp buckets with lids, are handy not only for carrying water, but for baking large joints in. When the temperature permits, meat should be well hung, as the flesh of many antelopes is very stringy and tough; flies can be kept off by hanging it in large muslin bags. Fresh milk obtained from natives must be well boiled, and afterwards the dishes containing it covered over. When sending for milk it is best to have it fetched in your own vessels, native ones being very dirty. Eggs should be tested before purchase, and even then are best poached or made into omelettes, as they are often addled, and natives consider the fact of a nearly hatched chicken being inside rather enhances the value of the egg. Village ground flour generally contains a lot of grit from the stones used in grinding it, and may set up serious inflammation in the unhabituated stomach. Pumpkins, sweet potatoes, beans, tomatoes, and other vegetables should be bought whenever chance offers, being all excellent additions to the cuisine. "Biltong" is made by cutting the meat of newly-killed animals into thin strips, soaking in brine, and rubbing in salt and pepper, so that every part of the grain is reached, and then hanging it up in a shady place until it becomes as hard and dry as a stick. It is then capable of lasting for years, and is an excellent thing to carry on an emergency trip, or when hunting. It can either be boiled down into soup, or cut off in thin slices and eaten without any preparation. All meat intended for biltong should be carefully examined to make sure that it is free from parasites. Game birds are excellent split open lengthwise and cooked on red-hot embers (spatchcocked). A well-fitted luncheon basket is a

necessity to a properly equipped expedition, and a box, made with padded compartments, should be carried to contain glasses and other breakables. All food boxes should be made of some light strong wood, with sliding lids, and padlocks taking the same key. If the expedition is to be of more than a few months' duration, they should be tin-lined and hermetically sealed, while each should contain a proportion of the kinds of food in daily use, rice, sugar, tea, coffee, &c. calculated to last for a defined period; thus only one need be opened at a time. As each case becomes empty it can be utilised for holding specimens and other accumulations of the expedition. No case should weigh, when fully-packed, more than 50 lbs. A small roll tool chest, with plenty of nails and screws, is indispensable.

Now as regards clothing. For six months, it will be sufficient to take a couple of pairs of strong khaki knickerbockers, one of which may, if desired, be afterwards cut down into "shorts"; half a dozen pairs of short drawers; three shirts made of brown or khaki flannel, with two breast pockets and a spine pad; leggings or putties according to taste, and one khaki Norfolk jacket for bush work. Many men prefer to wear a waistcoat only over the shirt, as it protects the body and leaves the arms free. For camp, one old tweed or flannel suit and two or three pairs of flannel or cotton trousers; plenty of thick knitted socks, a few silk shirts, a sweater, and a couple of sleeping suits. A warm great-coat, and a good mackintosh must, of course, be added. Handkerchiefs are best made of coloured silk, and should be as large as possible, in order that they may be worn round the neck if desired. Headgear should consist of one good sun helmet of the best pattern obtainable, with puggaree, a double terai hat for hunting, and a cap for evening wear. The footgear is most important and plenty of strong boots must be taken, as well as a pair of light shoes for camp. Boots ought to be oiled and greased inside and out and rendered thoroughly pliable before starting, as many a traveller is laid up in the early days of his expedition, and so loses much valuable time, through getting blistered feet. A pair of long canvas or soft leather boots, reaching above the knees, are a great comfort in mosquito countries: nothing can be better for the purpose than the camel boots used in the Egyptian army. If observations are to be taken at night, a pair of leather gauntlets alone will prevent them from being a source of torment. Sail and ordinary needles, as well as plenty of cotton thread and thin twine, must not be omitted from the equipment list. A veil, made to go over the head and shoulders and known as an "insect puzzler," is a great protection against both

Packing Warthog on Donkey.

Tilt Waggon and Camp in the Bush.
(Mr. R. T. Coryndon.)

mosquitoes and flies. Two or three blankets as well as a Jaeger sleeping bag will not be found too much at certain times of year when the nights are frequently very cold. Pillows should be stuffed with feathers, and covered with strong canvas, to obviate leaks. Comfort is greatly enhanced by the use of linen sheets and pillow cases. Good large towels should be taken. In chosing mosquito curtains, great care must be exercised in seeing that the meshes are small enough. Many nets are sold of which the mesh is so large that some of the smaller kinds of mosquitoes can enter without difficulty, and sleeplessness, intense misery, and possibly fever is the result. In some parts of Africa mosquitoes are so numerous and aggressive that, without the protection of a table net, it is impossible to eat the evening meal in peace. This net should be about six feet high, with eight-foot sides, and can be rigged up on an extemporised frame. All nets should be put up before sundown.

When it is anticipated that a day or more may be spent in the same place, the careful choosing of the site for the camp is most important. It should not be too far from the water. Where the latter is scarce and bad, it is best to dig a fresh well at the side of the hole, should the nature of the soil render this proceeding possible, and let the liquid filter through. Water should always be boiled for drinking, no matter how clear and sparkling it may be. The servants should get ready enough overnight to fill the water-bottles and sparklet syphons for the next day's march. The tent should be pitched in the shade of the best available tree. The necessity of this may easily be forgotten if camp is made in the cool of the evening; but it is a very important consideration when the following day has to be spent in the place. Thorn trees must be avoided, as the ground beneath them will be covered with the little spikes shed from the branches. The exact position of the tent should be relative to the arc traversed by the sun during the four or five hottest hours of the day. Plenty of old logs and fallen trees in the immediate vicinity is advantageous, as the collection of firewood is thereby much facilitated. When transport animals are used, the nature of the neighbouring grass will affect the selection of the site. In a standing camp, it adds much to comfort to have a thick leafy shelter erected wherein to partake of meals. A separate fire for the exclusive use of the white man should be made near the tent or dining place. Do not camp close to a swamp or stagnant water, as mosquitoes are a terrible pest in such places. In countries where *spirillum* tick fever is prevalent, never camp on ground which has recently been used by

other parties, and never sleep or allow the bedding and goods to be stored in native huts.

After the tent has been pitched, the traveller's belongings and stores should be brought up, and placed in a semi-circle in front of it, that they may be both easily got at and less liable to pilfering. In the wet season they must be carefully covered up last thing at night, and to this end are best piled in a heap with tarpaulins on top. Rifles must always be brought into the tent to avoid rain and dew. When travelling light without any bedstead, a shallow hollow can be made in the ground to accommodate the hips, and a pile of dry grass laid under the blanket or mattress; this forms a most comfortable couch.

In a game country, when travelling with transport animals, if time and sufficiency of labour permit, it is a wise proceeding to build a thorn fence round the camp. Though it is seldom that anything untoward occurs, the traveller will sleep all the sounder from feeling that his animals are safe. In the Transvaal Game Reserve there have been several cases of patrolling rangers owing the safety of their horses and pack donkeys to this precaution. Building fires is seldom of much avail: they die down towards morning, and in many parts of Africa natives are not used to night watching, and cannot be trusted to keep awake. The writer once had a very narrow escape of losing some animals through relying on fires as the sole protection.

The "outfit" consisted of three horses, two mules, and only a couple of native syces. Camp had been made late, and the best that could be done was to build half a dozen fires round the camp. The animals were all picketed to one long ground line, at the one extremity of which was the native's fire, and at the other, that by which the writer slept. Towards midnight a sudden commotion arose amongst the animals. The mules tore up their end of the line, and immediately became tied up in so complicated a knot with the horses, that luckily neither were able to move at all. As the "boys" sprang up, they saw a male lion standing about three yards away across the fire, staring straight at the horses. With considerable presence of mind, the senior, an old hunter, hurled a burning brand at it, whereupon it turned and bounded away. The whole incident was a matter of a couple of seconds. The night was pitch dark, and the work of disentangling the frightened animals to the accompaniment of occasional shots, and the hurling of fire sticks, was by no means easy. Fortunately in about an hour's time the moon rose,

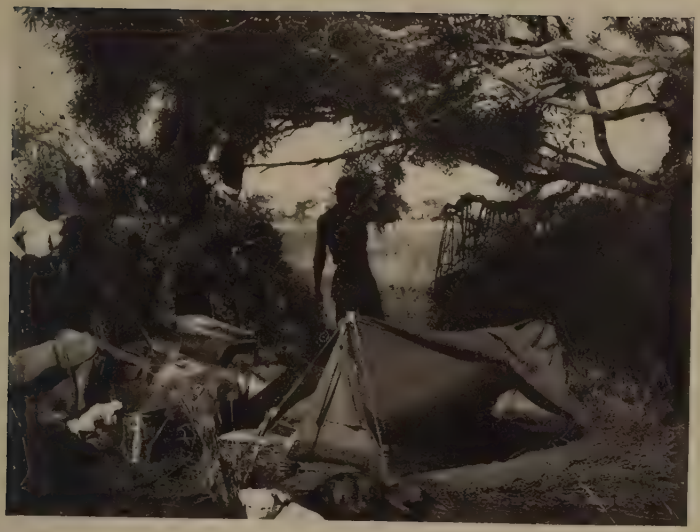
and the remainder of the night passed quietly. In the morning, it was evident from the tracks, that a couple of lions had been stalking the horses, and that, just as the "boys" caught sight of the first lion, a second had been coming up from the other side, and at that moment must have been but five or six yards away from the animals. The footprints indicated how, alarmed by the shouting and the fire-stick, it had suddenly "propped," and then swiftly bounded away after its companion.

If the camp is pitched anywhere near a village, or, if the natives attached to the caravan possess any dogs, it is well to be careful before going to bed that all stores are put out of harm's way. In the native cur of Africa self-reliance in the seeking of daily bread has been so developed by generations of ill-usage and neglect that it has attained almost the acme of perfection, and in intelligent thieving there are probably no superiors and few equals among the dogs of the world. His whole life being one long struggle with starvation, every moment not spent in sleeping is occupied in methodically quartering, with nose glued to earth, each inch of ground in and around the village that no tiniest scrap of anything capable of conveying some nourishment to his gaunt frame may be overlooked. Though every sense seems thus concentrated, there is at least one eye always on the alert for the hurtling stick or stone, the sole form of human attention he has ever known, and in avoiding such missiles he displays an agility which can be acquired only by long practice. When, therefore, the white man, with his ample stores and his well-fed attendants, camps near by, the ensuing waste, so different in quality and in quantity from anything ever seen at home, appeals strongly to the native dog. His cunning is too great to allow of any interest being betrayed during the day, but, so soon as all are wrapped in slumber, his slinking form comes flitting ghost-like through the shadows, every step displaying the wariness of the wild animal, and every muscle at tension, that he may be ready to spring away upon the slightest alarm. With all this caution, he still exhibits the most surprising tenacity of purpose. He will eat his way through a reed fence, crawl under the fly of a tent, nose the lids off all the cooking pots, and lick the insides clean, besides pulling down meat suspended from branches at heights apparently prohibitive. No partially used tins of milk or other food, left anywhere within reach, escape his attention. Headskins left out to dry will be found half eaten in the long grass near camp in the morning, and he has been known to dive headlong into a pack-saddle bag, hung

up for safety, and carefully pick out and carry away all the eatable contents.

Besides the native dog, the hyæna forms a danger to property which must be taken into account. This animal's mode of procedure is to hang about in the shadows when all is quiet, until he has made up his mind exactly what he wants, and then, everything being favourable, to rush in, seize in his powerful jaws, and tear or drag away the coveted object, whether it be a beef tin, the skin of a buck, or the fleshy part of a sleeping native's anatomy. On one occasion while encamped near Kashumba on the middle Zambesi, just outside the gates of the Portuguese fort, a hyæna entered the writer's tent during a midnight storm, and abstracted the headskin of a hippopotamus, which, after great labour and difficulty, had been at last successfully dried. Next morning the track was followed for over a mile, but the trophy never recovered. In the vicinity of human habitations these creatures are generally much bolder than when found far away in the forest.

When he happens to camp near a river or swamp, the traveller in the hotter parts of Africa must beware of certain carnivorous ants belonging to the family of the *dorylides*, or wanderers, and more popularly known as driver ants (genus *anomma*). They are of reddish brown colour, from one-eighth to one-quarter of an inch in length, and provided with exceptionally large heads and jaws. They are of purely nomadic habits, wandering about the country in great armies, composed of millions of individuals and seldom remaining long in one place. Against an incursion of these desperately pugnacious little insects, nothing avails on the part of any beast of the forest but instant flight. They are the true lords of the wild. The most fierce and powerful mammal, and the most deadly snake, become, in face of their attack, mere panic-stricken fugitives, rushing vainly for relief to the nearest water, or desperately rolling on the earth in their endeavours to free themselves from the torture of a million poisonous bites. *Serui*, as they are called in some parts of Africa, march about the country in organised columns, falling savagely upon every living thing which, happening to lie in their path, is unable to avoid them. Such a column may often be seen crossing a native track, and looks much like a thick and extended rope. The marching ants, moving steadily on, five or six abreast, are generally closely hemmed in on either side by dense lines of their comrades, which, sometimes clustered two or three deep on top of one another, stand, more or less upright,



A small Hunting Camp.

A Base Camp.

agitating their *antennæ*, and often apparently facing outwards. The general impression on the mind is that of a procession passing down a crowded street between cheering lines of populace. I have never been able to discover whether the flank guards actually form part of the marching column, and successively join it as their places are taken by others, or whether they are composed of a separate advanced detachment of professional soldiers, which, placed to guard the progress of the workers, afterwards fall in in their rear. Even the workers, if such they can be called, are very formidably armed, and attack just as fiercely when occasion demands as do their military companions, whose huge heads, with attached scissor-like jaws, seem quite to dwarf their bodies. The "ropes" are often several hundred yards long, and care must be taken not to step on one, for if the traveller is so unwary as to do so, he will find himself attacked in an instant by thousands of savage biting insects. Rivulets or drains are crossed by means of a bridge formed by the leading files linking their bodies together for their comrades to pass over, and thus it takes several feet of water to stop or deflect the march of a column. The army pursues its course, indeed, quite regardless of loss of life, and will go straight through or over most obstacles. There is no doubt that snakes of all kinds, when sleeping in the grass, fall frequent victims to these ants, under such circumstances, and against such enemies, being about the most helpless of living things. It is at night, however, that *serui* are most dangerous to man. It seems at least highly probable that scouts are sent out to locate beforehand the position of likely food, and that, having done so, they return to lead the column after dark to the spot. However incredible all this may sound, the experiences of numbers of travellers coincide as to the extraordinary intelligence displayed in such raids. A sleeping man may be covered from head to foot by a mass of insects, which, until the moment comes, refrain one and all from harming him. Then simultaneously, and apparently at some given signal, every ant digs its pincers into the flesh beneath, and, doubling its body, pulls with all its might in an endeavour to tear out the piece of flesh it has seized. The victim, thus rudely awakened, springs up with a shout, and rushes madly about, rending off every stitch of his garments. Should assistance be available, a few minutes may suffice to scrape off most of the insects from his body; but probably several will have penetrated deep into each ear, where, until evicted by the pouring in of oil, they will cause exquisite torture, as they bite and tear at the sensitive parts of the organ. The late Captain Quicke, of

the King's Dragoon Guards, when travelling in Barotseland in 1899, had an experience of the above kind, and said it was one he would not forget to the last day of his life. When swarming on some piece of meat or small creature which they are devouring, these insects form a sort of a ball round it, the whole mass seething and humming with activity. This custom of hanging together like bees is observed also when the ants are nesting, and is very typical of the genus. A missionary, who had tied up a calf overnight, in the morning found nothing left of it except the clean-picked bones, and Major Gibbons had a similar experience in the case of two guinea-fowls confined in a cage. In June, 1899, I was encamped on the banks of the Kwando River, in a deserted native village, where I used my tent to sleep in and a large native hut as a dining-room. During the whole of one day, I had noticed single *serui* wandering about the camp in the apparently aimless manner typical of ants in general, and in my tent there were a good number amongst the cartridges, which happened to be greased with animal fat. It was my custom at that time—candles being scarce—to go to bed in the dark; but, on this particular night, by sheer chance, I happened to carry the lighted lantern with me from the dining-hut to the tent. For a moment I could not understand what was the matter with the interior. The whole of the floor and walls, as well as the bed and mosquito curtain, seemed to be moving, and then I realised that all were covered by a dense mass of ants, swarming in every direction. From the mass seemed to come a faint humming noise. I immediately awakened the natives, who were sleeping some distance away; but obviously there was nothing to be done except spend the night by the fire, minus greatcoat and blankets. Next morning not an ant was to be found, and though we remained nearly a week in the same camp, nothing further was seen of them. I was once attacked by driver ants while endeavouring to stalk some lechwe in the Kwando swamps, and it is hardly necessary to state that if the antelope benefited upon this occasion, the larder did not.

A story is told of a missionary who was once travelling up the Zambezi by canoe. Having camped on a small island in mid-stream he allowed his native servants to take the boat and proceed to the mainland, in order that they might sleep at a neighbouring village. Some time during the night he was attacked by driver ants, and, rushing out of his tent, found the whole island apparently covered with them. He took the only course which appeared feasible under the circumstances, and, disregarding risks from crocodiles, stood up

to his ankles in the river till morning! The fate of a sick man or helpless infant discovered by these terrors, when temporarily left alone, need not be enlarged upon.

Whatever may be the main object of an expedition through a little-known country, mapping of the route is not only always useful, but adds greatly to the interest of marches which otherwise might be dull and lifeless. Here again "Hints to Travellers" should be consulted, and, if possible, a short course of elementary surveying should be gone through before starting, in order that the use of the few simple instruments necessary may be learned. Although the halcyon days of the pioneer explorer have passed so far as Africa is concerned, and only a very few totally unmapped areas remain, there is still plenty of useful work to be done in plotting small areas of country, and filling in detail along out-of-the-way routes. Any such work, however, on however modest a scale, must be conducted with great attention to accuracy, else it is merely misleading, and geographically of no account. The checking of distances by sextant observations of sun and stars for latitude is absolutely essential in the roughest work. In combination with the sextant an ordinary compass and plane table are best. Prismatic compass and field-book work does not give anything like such good results. Errors of instruments and local variation must be ascertained. Maximum, minimum, and boiling-point thermometers, together with an aneroid, complete the necessary instruments. Aneroid records should be checked by the boiling-point thermometers, and a careful record of maximum and minimum temperatures, whenever the traveller is stationary for any time, should not be omitted. Theodolites and chronometers necessarily accompany all expeditions whose main object is map-making and exploring, but when the latter are only side issues, the simpler instruments referred to are sufficient.

Drawing and writing materials and photographic plates must be packed in watertight tin boxes. As regards literature, in addition to any technical books required, a fair amount of light reading is desirable. For a purely sporting expedition I would recommend Lyddeker's "Game Animals," Selous' "Nature Notes," and, of course, Rowland Ward's "Records of Big Game," with either his, or some other work on taxidermy.[1] Where portability has to

[1] Almost every part of Africa possesses some work or works dealing with it from the traveller's and hunter's point of view. Mr. R. C. F. Maugham's charmingly written books, "Portuguese East Africa" and "Zambezia," should be acquired by visitors to these regions.

be considered—and books are very heavy in proportion to their bulk—works which will bear reading and rereading are the best; but it is marvellous with what avidity the lonely wanderer in the wilds will consume the veriest trash. In early pioneer days in northern Rhodesia traders and others often left their discarded paper novels at different villages for the benefit of the next white man who might come along. The books were treated with extraordinary reverence by the natives.

CHAPTER XXII

TRANSPORT IN AFRICA

Native Porters—Mules—Donkeys—Camels—Pack Animals Generally—Ox Waggon—Canoe—Travelling by Machila, on Horseback, on Foot.

THE methods of transport in savage Africa, away from railways and other conveniences of civilisation, vary according to the locality, but generally fall under four heads:

(1) Native porters. (2) Pack animals. (3) Wheeled transport. (4) Water transport.

Throughout the greater part of equatorial Africa porters still form, as they have done for long ages, the most convenient agency for moving goods about the country. Their efficiency is a relative quantity not only in individuals, but in tribes. The Wanyamwezi of German East Africa have for long borne the reputation of being the best porters in Africa, both on account of the large loads which they can carry for many hours at a good pace, and for their intelligence and docility. Many other peoples, such as the Yaos of Portuguese and British Nyasaland, are, however, excellent carriers. The ordinary way of bearing a load is on the head. The porter makes a pad of cloth, bark, or grass, which he places between his cranium and the load, supporting the latter with one or both hands as he walks along. Among the various tribes subject to Barotse influence in north-western Rhodesia, the load is carried in two portions fastened one to each end of a stout stick carried diagonally across one shoulder. This method entails all loads being halved, which is very inconvenient. Some of the British East African tribes carry the package on the back, the weight being taken by a band passed across the forehead. Whether it is due to the method adopted, or merely to natural incompetence, the inhabitants of this region do not touch the highest level as carriers, and a great deal of the caravan work is still done by Swahili professional porters from the coast. South of the Zambezi, animal transport being universal on the part of white men, the natives have little experience of load bearing, and, moreover, the Zulus and their numerous offshoots have always considered such work fit only for women and slaves, and far beneath

the dignity of a warrior. Women in south Africa, when they can be got, carry very well, and indeed all over the continent their capacities in this direction are equal to, if they do not exceed, those of the other sex. Loaded porters should travel on an average, given fair going, about three miles an hour. When travelling on their own account they can maintain this pace for a matter of nine or ten hours with short rests every hour; but when carrying the goods of a white man they display less spontaneous energy. The procedure, too, must be modified to suit European requirements, and it is therefore customary to march for some four or five hours in the morning with a couple of halts; then to rest during the heat of the day, resuming the march for two or three hours in the afternoon, with hourly halts of a few minutes. During the cool hours of the morning, good porters will often make three-and-a-half miles per hour, but as the day gets hotter, and the men more fatigued, the pace falls to two-and-three-quarters, or even two-and-a-half miles per hour. The average load should weigh about 50 lbs., though good porters will carry 60 lbs., and natives with their own goods will make light of 70 lbs. or even more.

Unlike the European, the African can start in the morning on an empty stomach, and do a long march without feeling any inconvenience or ill effect. The people of certain tribes require food at night only. In north-western Rhodesia some twelve years ago the porters—Masubias, Matokas and others—after indulging in a hearty meal soon after dark, liked to wake up in the small hours and indulge in a second repast—a custom not only disturbing to the slumbers of the white man, but often prejudicial to an early start. These men constructed night shelters consisting of two upright forked stakes, three or four feet high, placed a certain distance apart. Resting horizontally upon these was a long pole, against which, with their butts touching the ground, were placed leafy branches and grass. The open side of the shelter was to leeward, and fires were built in a line in front. Baganda porters are accustomed to make themselves particularly comfortable at night—a habit possibly induced by the uncertain nature of the climate of their native country. Upon halting for the night, they run up, in a wonderfully short space of time, the most elaborate grass huts, about five feet high, with low doorway complete. Their food consists of cooked bananas and plantains, and, although the principal meal is eaten at night, something is always saved for the next day's breakfast and march. Like the Zulu-speaking peoples, the tribes inhabiting the basin of the

South African Ox Waggon.

Hunting from a Railway Trolley.

Baganda Porters at Gondokoro.

upper Nile dislike carrying loads, and are with difficulty induced to do so even for a short distance.

Porters have the advantage of being available over any kind of country where a man can walk; their pace is relatively fast, and on rest days they can be utilised for various purposes such as hunting. On the other hand, where food is scarce, or unobtainable locally, their employment has many drawbacks; extra men must be taken to carry food for the others, and, when supplies run short, mutiny and desertion are not unusual. Their management always requires considerable tact and experience, and they invariably endeavour to proceed by such routes as may be most convenient to themselves, as well as to suit the length of the day's march to their own ideas rather than to those of their employers. It is by the frustration of the various attempts to get the better of him, without upsetting the temper of his followers, that the experienced traveller demonstrates his superiority over one new to the African native and his wiles, who may be goaded into the fatal error of losing his temper. After a little experience it will be seen that the different attempted impositions fall under certain definite heads, to each of which the apposite counter exists. What is known sometimes as the "water bluff" affords an instance. You are perhaps specially anxious to push on quickly to a certain point; but after going three or four miles, the caravan reaches a village where there happens to be plenty of food, a fresh brew of native beer, or where some of the porters have relatives. There is a halt, to which you probably have no objection; but presently, just as you are giving the word to move on, a woe-begone deputation approaches with the intelligence that there is no water in front for a long way, and that only by starting very early next day from the present situation can it be reached before nightfall, and therefore to-day had best be spent here. The best reply to this is to tell the headman to get all the water-bottles and calabashes filled; adding that a rapid and long march must be made at once "in order that the water may be reached early to-morrow." This evidence of a determination to move on will generally cause the deputation to fall back with a sheepish air, while a ripple of laughter at their discomfiture arises from the remainder. Water will very probably be subsequently found to exist every mile or two along the route. If it is noticed that the men are really setting to work to carry out the instructions in regard to the filling of the vessels, their story may possibly have some foundation, and you must use your judgment accordingly.

Stolid determination and unchanging good nature are the best weapons for dealing with the African, who is very like a child in many ways: full of fleeting emotions, easily amused, easily annoyed, and a very acute judge of character. No offence should be passed over, and every extra service or good work should receive special recognition. When it has at last been realised that the master cannot easily be imposed upon, the efforts to take advantage of his good nature will fall into gradual disuse, and some at least of the information conveyed may be relied upon as accurate. Unrestrained violence or surrender of temperate bearing begets contempt, and may often lead to wholesale desertion, as many a white man in the wilder regions of Africa has discovered to his cost. Under such circumstances it is often impossible to renew the caravan, and the traveller, being dependent entirely upon his followers for transport and comfort, finds himself in a hopeless predicament. All natives in their hearts fear and recognise the superiority of a European, but are at the same time continually on the watch to take advantage of any weakness or lack of decision on his part, and if his dealings show an habitual lack of firmness, his fate is sealed so far as the comfort of the journey is concerned. Similar principles apply to all intercourse with petty chiefs and local natives, who in the past were often sources of great inconvenience and hindrance to travellers, and in the more remote districts still betray something of the same obstructive and predatory tendencies. It is always useful to remember that natives, being devoid of all altruistic ideas, cannot understand what in civilised society are known as generosity and benevolence, which therefore appear to them merely manifestations of weakness. The qualities which they can and do comprehend are fair dealing and strict justice, which, though they should be associated with a pleasant manner, must be backed by steady determination.

Desertion by his porters is one of the most serious inconveniences which an African traveller may be called upon to face. In the early part of 1899 we started out from Mamili to trace the course of the Kwando River, which now forms part of the boundary between north-western Rhodesia and Portuguese Angola. The caravan consisted of some thirty local porters and three Barotse headmen, and all went comparatively well until the boundary of the Bamashe country was reached. In front dwelt a wild race, very nervous of all strangers, especially of the Barotse, by whom they had often been raided. Their dwellings were built upon small islands in the midst of enormous reed swamps, access whereto was possible only by the

use of canoes, which, upon the approach of any suspicious party, were always carefully removed from the mainland. All possible communication having been severed, our future in regard to the food question appeared ominous, and before dawn one morning a headman brought the pleasing intelligence that the whole of the porters had decamped during the night. A week's wearisome delay resulted in the recapture of a few of the fugitives, and the production of a certain number of somewhat unwilling fresh recruits from the country in rear. Food was collected and game was shot, but all to no purpose. The terrors of the unknown again proved too much for the native mind, and on the third day the camp was again deserted. Under the circumstances, the only solution appeared to be to dispatch one of the headmen to Lealui, distant 300 miles, with a letter asking help from Lewanika; while our personal attendants, and those of the headmen, none of whom had been engaged as carriers, made shift to carry the loads in treble stages to the dwelling of a Barotse petty chief, one of those men whom Lewanika was accustomed to station in out-of-the-way parts of his dominions as representatives of his authority. Here a delay of more than six weeks was undergone, not under the most pleasant of conditions, but at the end of that period a number of reliable porters arrived, by whose aid the march was successfully completed. Had the paramount chief been unsympathetic, or had the desertion occurred in one of the many countries devoid of central authority, without doubt most of the loads must have been abandoned and the objects of the journey seriously thwarted. During a short expedition through the more disturbed districts of Portuguese Nyasaland in 1908, the frightened porters were most carefully watched by the askaris and personal servants who accompanied the caravan; but in spite of all precautions, many of them took advantage of being momentarily out of sight in the windings of the forest road, to fling down their loads and dive into the surrounding bush, to be seen no more. Of course, the loss of even one porter causes considerable inconvenience, his load having to be broken up and distributed among some of the other men, who naturally grumble at the extra weight and possibly debate the advisability of also taking French leave. Desertion is a remarkably catching complaint amongst natives; once the idea gets into their heads it is very difficult to stop the epidemic from spreading, whether good reason exists or not.

The employment of transport animals pre-supposes climatic con-

ditions favourable to them. In many parts of Africa horse-sickness and the presence of tsetse fly render their employment impossible; but where it is practicable to use them, they have the advantage over native porters of never going on strike, never obtruding their own views as to the desirability or otherwise of certain routes, and not requiring pay, besides being relatively easy and inexpensive to feed and look after.

Pack mules hold the lead in mobility. They will march at three-and-a-half miles an hour where going is good, and can carry 160 lbs. They will travel over any ground, no matter how steep and rocky, being very sure-footed and nimble. They are very tough and enduring, and less liable to galls and sore backs than horses. When well treated, mules are naturally docile and patient, though apt to show temper when ill-used. They walk at a steady pace, and do not shake up the contents of the packs as donkeys do. They require, however, a good deal of attention, must be carefully herded when at grass, and unless the latter is very rich and plentiful, need a certain amount of hard food. Though in this latter respect their requirements are much more modest than are those of horses, still grain of any kind is often hard to procure locally in any quantity, and carrying it with the caravan implies a large number of extra animals. When well trained, mules pull well and move fast in draught, but are not equal to oxen in countries where there are no roads, and the waggon has to be dragged through successive ravines and heavy sand spruits. About 3,000 lbs. is a fair load for a waggon drawn by ten mules in south Africa, given that there is some sort of a road. Whether employed under pack or in draught, mules require the same treatment accorded to horses, that is to say, there must be plenty of short halts to allow of the animals grazing and rolling, and great attention must be paid to the matter of watering them. Mules must be carefully herded, as they are liable to stray, and to join troops of zebras. They are liable to horse-sickness, though scarcely in the same degree as horses, and in the Transvaal a system of inoculation has been introduced which renders more than ninety-five per cent. of the animals treated immune from the malady. Like other domestic animals, they are susceptible to *nagana*, and kindred fly-borne diseases, and cannot in consequence be taken into areas where they are rife.

Pack donkeys are perhaps on the whole the most satisfactory means of transport, where a wild and pathless country has to be traversed. They are cheap and hardy, require no food except such

On the March with Pack Donkeys.

as they pick up from the earth itself, are easy to herd and to secure at night, and if in good condition will carry a load of 100 lbs. for seven or eight hours a day, at the rate of from two-and-a-half to two-and-three-quarter miles an hour. On emergency they can do their twenty-five or even thirty miles a day. They have the power, even more than mules, of being able to pick their way over the roughest and most stony country; they hardly ever go lame, and do not gall easily. On the other hand, they walk just a little slower than the natural pace of their native attendants, who are therefore often inclined to hustle them, causing them to jog, and so to shake up the contents of the packs. As draught animals they are distinctly inferior. The pace of a donkey waggon is so slow, and the capacity of the animals to pull it out of difficulties is often so limited, that this, to my mind, is one of the most aggravating and tedious modes of travel that can be imagined. Donkeys are nearly immune to horse sickness, indeed they are widely believed to be entirely so, and although this is unfortunately not quite the case, the percentage of deaths from the scourge is so small that it may be neglected as a practical factor in regard to them. Since the creation of the Transvaal Game Reserves in 1902, the losses from this cause have amounted to little more than one per cent. annually, though the country is absolutely fatal to "unsalted" horses and mules; possibly, indeed, could the history of the animals affected be traced, it might be found that they had been originally imported from some oversea country where the disease is unknown. Donkeys die from the effects of bites of tsetse, but can go on working in a fly area longer than any other transport animals.

Camels are the principal form of transport in use in north and north-east Africa, where the rainfall is small, and the country sandy and arid. They have many advantages, being the only transport beasts that do not become exhausted by travelling through sand, and can moreover go for long periods without drinking, but useful as they are in the regions where they are employed, they are entirely unsuitable to the more humid areas of equatorial and southern Africa. Some years ago a few camels were imported to the Transvaal as an experiment. It was hoped that their employment would solve the transport difficulties, acute at the period in consequence of the ravages of east coast fever. They proved, however, poor travellers through the mud, and were unable to keep their feet on slippery ground, being therefore nearly useless, except during some five months of the year. After a time they became affected by some

epidemic disease which killed most of them, and fearing that the outbreak, in that country of virulent stock maladies, might not confine itself to the camels, the authorities hastily got rid of the remainder.

In working with pack animals of any kind, the greatest pains must be bestowed upon the proper fitting of the saddlery and the adjustment of the loads; important items which the native mind deems of very small consequence. It would therefore be well for the traveller on all occasions himself to see his animals made ready. If loading-up is left in the hands of the servants, galls, sore backs, and wrung withers, will infallibly be the result to the beasts, and trouble and delay to the traveller. Whenever a halt is made for rest or food the first care must be to unsaddle the pack animals, and, after they have had a roll, to *see* them properly watered. They must after this be driven to the best grass in the vicinity of the halting place. A herd boy must be told off and made responsible for their safety while at grass, and where there is mixed transport, such as donkeys and horses, or mules and oxen, a separate man should be delegated to attend to each kind. During a long halt it is as well now and then to stroll out in order to see that the herds have not gone to sleep, or the animals strayed away to any distance. On one occasion at Sabi Bridge the horses, donkeys, and mules were driven out to grass as usual, and when they had got out of sight of the station, the natives in charge sat down to eat or to play some game. About three hundred yards further on, five lions happened to be lying asleep in a donga or ravine, and the animals walked right on to them, with disastrous consequences to one of the mules. Had not the excited braying of the "jack" donkey brought up the natives, more damage still would certainly have occurred, and, as it was, the horses were not got back before dark. Horses and mules which show the least disposition to stray are best knee-haltered or hobbled when turned out to graze. Knee-haltering consists in fastening the head rope, which is attached to the back ring of the headstall, to one foreleg a little above the knee; the nose is thus pulled down to about eighteen inches from the knee, and, while the position is a perfectly natural one for grazing, so soon as the animal raises his head in order to move, one foreleg is necessarily pulled up in the air, thereby considerably restricting free action.

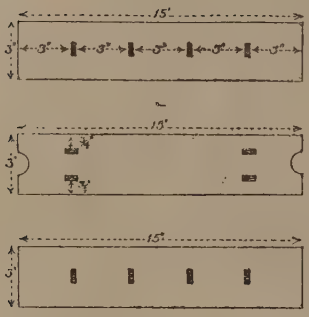
Many methods of packing animals are in vogue, the systems and types of saddles varying in different countries. The great thing is to see that no weight presses on the animal's backbone, and that the

An " Outspan."

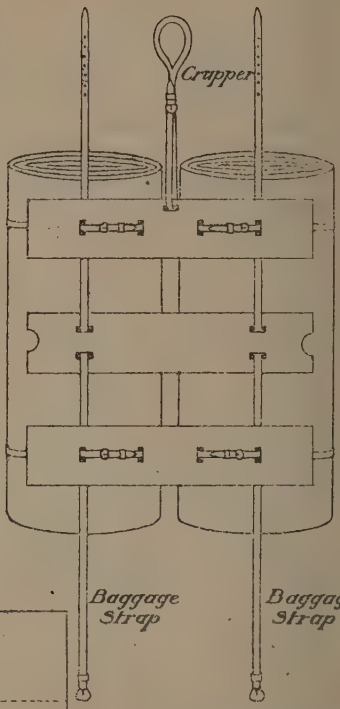
Travelling in the Eastern Transvaal.

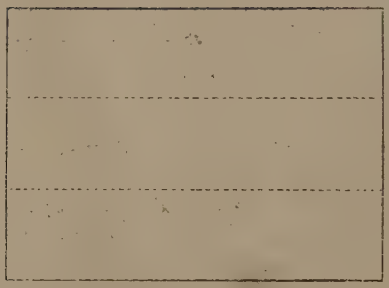
load does not shift about on the back. Quite a good saddle can be extemporised by making two long pads of sacking stuffed with grass, like glorified sausages, and securing them firmly lengthwise on each side of the backbone, by girths or ropes passed under the body. In the Sabi we have always used for donkeys plain wooden crutches, set on panels and weighing only a few pounds. When saddling, a sheep skin or blanket, folded in front, so as to supply the place of withers, and keep the saddle from slipping forward, is first laid on, care being taken that there are no creases on the under side. The saddle is then placed exactly in the middle of the animal's back, and tightly girthed up, the hand and arm being pushed under the blanket during the process, so as to shove it well up into the crutch between the panels, and allow a free current of air to pass along the centre of the back. For hill work, the addition of breast plate, crupper, and tracing will be found useful. The load must always be carefully adjusted, so that an equal weight hangs on either side. We have found large leather saddle bags, holding about 50 lbs. each, and joined by a leather cross piece, to allow of their being flung across the saddle, quite the best for general purposes. A raw hide or other rope is tied between the crutches, to keep the weight from sagging down on the back. For carrying breakables and things which must not be shaken about, the following plan is sometimes adopted:— Take a couple of empty five-gallon paraffin tins; cut out one side of each and round the other three nail a piece of green hide. As this dries and hardens it will shrink on to the tin, making a very strong box. A lid is then added, and two straps, furnished with rings, are passed round the box to hang it from the saddle hooks.

An excellent pack saddle can be extemporised out of two service blankets (any other blankets or even large great coats will serve nearly as well), combined with three flat pieces of wood, each measuring about fifteen inches by three, six straps, and a couple of cords or raw hide ropes. Fold the blankets lengthwise into three, and then double each over into two parts of unequal length. Roll them up, the shorter end forming a pocket for the longer. Lay the two rolls side by side a few inches apart, and across them place the three boards, previously punched with strap-holes, as in the diagram (the centre one notched at each end). Secure the two outside boards to the rolled blankets by four straps passed through the holes in them, and round underneath the blankets. Then pass two long baggage straps, one through the holes at each end of the centre board; bring them under the side boards so that they are at right



The Queensland Pack Saddle.





I. Method of folding blankets before rolling.

II. Rolled.

The Queensland Pack Saddle.

Pack Donkey with Saddle-boxes.

Pack Donkey with Saddle-bags.

angles to the latter, and are parallel with the length of the rolls, projecting well beyond them. The saddle may now be placed on the animal's back and girthed up. To do this, take a fairly long rope, make a small loop at one end of it, pass it over the centre board, catching it in the notches in the ends of the latter, then bring the free end round under the animal's belly, pass it through the loop at the other end, draw tight and fasten. A couple of turns round the animal, if the rope is long enough, will give greater security. Then put on the saddle bags, fasten the baggage straps, and place a second girth over all in the same manner as the first was put on. A crupper may be conveniently added. I believe this was originally a Queensland device.

A convenient saddle bag may be made from two sacks. Split each half way down the seam on each side, and then placing the sacks, as it were, back to back, sew the inside flap of each to that of the other. The outside flaps are useful to fold back over the contents of the bag. These do very well in a country free of thorns.

A very good hitch for securing packages firmly is made by two men in the following manner :—Take a thirty-foot rope, throw half on each side of the mule or donkey, the middle of the rope lying across the top of the pack ; then let each man make a loop round the pack on his side, putting his foot in it as if it were a stirrup, to keep it open. Then the man on the off side takes his end of the rope, and passing it down through his stirrup loop, puts it under the belly and through his companion's stirrup loop on the other side (both meanwhile holding taut with one hand above). When he has pulled the slack of his part of the rope through (but not till then), he tells his companion to slip his foot out, and at the same time smartly hauls the caught-up stirrup loop from the near side into its place under the mule's belly. Then his companion in turn takes his end of the rope, and, reaching under the belly, puts it through the stirrup loop on the off side (which the first man has kept his foot in) and hauls it similarly into place on the near side of the belly : then both on their respective sides giving a good pull together, make everything taut, and all that remains to be done is to tie the spare rope ends with a double reef knot (pulling tight again when making it) on the top of the pack. The above is a well-known Colonial hitch, but the actual wording comes from Mr. Tegetmeiers's book on equines.

Pack animals are best tethered at night in line to a long ground rope. The ends of this can be fastened round the trunks of trees at

about three or four inches from the ground. The advantage of this system is that when owing to sudden scare or panic the animals strain back on their headropes, the latter are less likely to be broken, and the strain not being directly on the ends of the ground line, the worst that can happen to it is the pulling up of the pegs which fasten it down. Since all are secured to the same rope, the animals cannot break away singly. When tied up to trees or to single ground pegs they are almost certain, when alarmed at night, to break headrope or headstall, or pull up their peg, and then dash out of camp in their unreasoning panic.

Grass should always be cut for horses, mules, and donkeys at night. The period between sunset and dawn is too long for any equine to go on an empty stomach, and the grass growing within the animals' reach is quickly finished. Always look carefully for indications of galls and rubs immediately the loads are taken off. If discovered at once they can be easily remedied, but if the load is put on day after day and goes on rubbing the same place, the sore will become so bad as possibly to incapacitate the animal for months. If the pack cannot be adjusted so as not to press upon a new rub, it must be removed altogether, the load distributed and the animal allowed to go for a few days with no weight on its back.

Horses, mules, donkeys and oxen all swim well and strongly. When a deep river has to be crossed, the loads should first be ferried over on a raft, or in a canoe, if one is available. Then some steady old animal must be driven in first to give a lead, one or more of the attendants, if necessary, swimming in front or alongside to guide and encourage him. The remainder of the animals if urged from behind will nearly always follow a leader.

The ox waggon of south Africa is without doubt the most commodious and luxurious method of travelling, where time is not the main object. For comfort it has no equal, both as regards the amount of stores and the nature of the camp equipment, which it can conveniently carry. The usual span of sixteen oxen can draw a weight of 6,000 lbs. at an average rate of two-and-a-half miles an hour, for six or seven hours per day, given fairly good going. Made roads and bridges are unnecessary, the waggon makes its own path through the bush or over the open plain, crushing flat the smaller obstructions and going round the larger ones. Ravines and water-courses of the most uncompromising appearance are overcome with the aid of a little spade work. The brake is put tight on, as the lumbering vehicle descends the hither side; there follows a short

Mule Waggon Travelling in South Africa.

Pack Mule.

halt at the bottom while the driver loosens the brake and the leader gets the span straight, then, amid a volley of strident yells, the great whip cracks once or twice like a pistol, the oxen bend to the yokes, there is a moment of strain, and the waggon creaks up on to level ground once more. For long "treks" it is always advantageous to have a few spare yokes of oxen if a single waggon is employed, as thus extra aid can be obtained when exceptional difficulties have to be faced, or should it be advisable to relieve one or more of the animals from time to time. When two waggons are travelling in company, and a bad "pull out" or a stretch of deep sand has to be overcome, the system known as double spanning is employed: that is to say, the whole span of the rear waggon is taken out and hitched on in front of that of the foremost one, which is then pulled over. When it is once more safely on level ground, both spans go back for its companion. The best beasts in the span are placed in the first and last yokes, and these animals are known as "fore" and "after" oxen respectively, and should always keep their places. Indeed, so far as possible, the same pair of oxen should always be yoked together anywhere in the team, provided they give satisfaction, as they will pull better when each is accustomed to the other's work.

A good driver is absolutely essential; a bad one not only soon breaks up the waggon, but utterly ruins the span in a very short time. The trek ox, with all his apparent apathy, is wonderfully quick at gauging the capacity or otherwise of his driver, and acts accordingly. It is extraordinary how with the same oxen one man by a single shout is able to impel united action, while an incompetent driver might be exhorting and thrashing so many logs of wood for all the notice that is taken of his efforts. The south African Boer is a past master of the art of manipulating and driving oxen; but many coloured men and natives are often also adepts at the work, and it is seldom difficult to pick up a good man.

Oxen travel well in the cool hours of the morning and evening, and when the weather is exceptionally hot, or long distances have to be covered to reach water or to pass through fly belts, it is often advisable to push on through the greater part of the night. During the hot hours of the day, the animals should always be outspanned and rested. They must be driven to water as soon as unyoked, and then allowed to graze on the best available pasture. After feeding they should be given plenty of time to ruminate, so that unless it is a question of urgency, long outspans are best. Where it is dangerous to allow all night grazing, they ought to be turned loose at early

dawn that they may have a clear hour to feed while camp is being struck and breakfast eaten. Similarly after arrival in camp at night, they should be allowed to graze on till dusk. Care must be taken that the herd boy does his duty, for should he go to sleep the oxen are very likely to stray, and, in a bush country, may easily be lost. At night they are generally made fast to the trek chain of the waggon; but, as in a lion country there is always a certain risk of their being stalked in this situation, I personally prefer, when labour is available, to build a strong thorn fence round them, rather than to rely on fires alone for keeping off predatory wild animals. At all our rest camps in the game reserve cattle kraals are built to accommodate the oxen at night. A steady old ox of the span should be belled, that in the event of the cattle straying in the bush, their whereabouts may be the more easily ascertained. If a native driver is employed, it is well to see personally before leaving civilisation that all the necessary repairing gear for the waggon is in the side-boxes, and care should be taken that tools are not left lying about when camp is broken of a morning. The African native is endowed with a happy heedlessness in such respects. All kinds of accidents may occur to the vehicle, especially to the disselboom, and the absence of augurs and other necessary implements implies makeshifts, with consequent undue delay. When open country has to be traversed, a tilt or hood is a great luxury: but in thick bush country, where there are no roads, it soon gets torn to pieces. Make sure that a plentiful supply of axle grease is taken.

For a hunting or other expedition there is no transport more satisfactory than the combination of a good roomy waggon with pack animals or carriers. A main camp can be established, the waggon left there in charge of the driver and leader, and the oxen rested. Expeditions can be made from it in all directions, and should it be inconvenient to return, a simple message will bring on the waggon, packed with the whole paraphernalia, to any specified place. When the wheeled transport is being used, the pack animals may be relieved of their loads, to the great benefit of any small galls or incipient sore backs. Almost any article of furniture can be carried on an ox-waggon, therefore if four-post bedsteads, chests of drawers, and padded armchairs are deemed necessary to the traveller's comfort, there is no particular reason why he should deny himself these luxuries. If the waggon is not provided with a tilt, all the goods must be placed under the waggon sail, which must be firmly lashed down. In camp see that this sail is kept drawn over the

Native "Dug-outs."

Canoe Travelling in Africa (Lujenda River).

waggon, to protect it from the sun's rays, which warp the dry wood.

In equatorial Africa, where the rivers by their nature often lend themselves to water transport, the traveller may sometimes find it convenient to make use of the native canoe or "dug-out." This form of travelling provides a welcome relief after long days of trudging on foot, and, when the stream can be followed, is a fairly expeditious method of progression.

A dug-out is simply a large tree-trunk, of which the interior has been hollowed out by hand, and the two extremities rudely fashioned to do duty as prow and stern; it may be of any length, width, and degree of seaworthiness. When it is of small size, the single boatman sits, kneels, squats, or stands, as may be the custom of his individual tribe, in the stern, and thence propels it by paddling in the usual manner. Large and heavily-laden canoes are of course manned by crews adequate in numbers to their size and cargo. The goods are distributed evenly along the bottom of the craft, and due economy must be exercised in the amount so stowed away, else disaster may be the result. When two or more paddlers are present, the traveller usually places himself in the middle of the dug-out, in order that the weights may be fairly adjusted. He should see to it that his seat is well cushioned with dry grass, carefully covered over with a waterproof sheet, otherwise he will ere long find himself resting in a pool of water. A sun shelter adds immensely to the comfort of a long day spent in an African river or lake canoe. It is made by fastening stout withes to the thwarts on either side, and binding them over to form an overhead arch: on this framework are laid reeds and grass, tied down with bark or native rope. If the blankets are unrolled and laid above the waterproof sheet, the traveller is enabled to recline at his ease during the somewhat monotonous journey. He must be particularly careful not to make any sudden violent movement, lest the rather frail craft be upset, and a like caution must influence him both in embarking and disembarking. To travel comfortably in a dug-out is, in fact, rather an art; but once the elementary principles of balance have been mastered, the body instinctively accommodates itself to its new surroundings, and many feats impossible at first may later be indulged in with impunity. A river "boy," indeed, will jump in and out, stand up and sit down, or balance himself on the stem, stern, or thwarts, with as much unconcern as if his little light canoe were some heavy whale boat. Dug-outs, when propelled by practised hands, are really much safer

and more stable than they seem to be on first acquaintance, and in the course of a very considerable amount of river travelling, I have seldom witnessed a serious accident. Natives generally paddle along close under the banks, for the double purpose of avoiding the stronger current which runs in mid-stream, and of being close to shore in case of an accident or upset. Especially do they hug the side when travelling up river; on such occasions, and at points where the current is unusually strong, often assisting the progress of the canoe by grasping overhanging branches and protruding reeds. In rivers where they are numerous, hippos are always rather a danger to canoe traffic. Accidently, or prompted by a spirit of mischief, a bull hippo may rise to the surface at a point exactly underneath the dug-out, thereby immediately overturning it, and precipitating its contents into the river. Perhaps a female with a young calf imagining she recognises in the approaching canoe some enemy seeking to destroy her offspring, may feel called upon to make an unprovoked attack, with equally disastrous results to occupants and cargo. A capsize in an African river, which always swarms with crocodiles, besides implying often quite irreparable losses in property, is attended with very grave personal risks, even to the most expert swimmer; and accordingly his partiality for feats of the nature described above forms one of the chief arguments against the continued existence of the hippopotamus in navigable waterways. Formerly a year never passed on the upper Zambezi, without one or more of the few hunters, traders, and missionaries, who then formed the sole white population of the Barotse kingdom, thus losing a canoe load of valuable goods, either medicines, absolutely priceless in that fever-stricken country, or European stores, or, may-be, an expensive rifle and ammuition from a first-class London maker. Small wonder then that the hippo often achieved excessive unpopularity.

In canoe travelling, it is advisable to get away as soon as possible after dawn, as the paddlers work best in the cool of the morning. A halt is made for food near midday, after which, with occasional short rests, the journey is continued until the approach of sunset renders it necessary to land, and seek a convenient camping place. River journeys, pleasant enough for the first day or two, soon become very wearisome. The banks of African streams are so often fringed by dense beds of reeds, that little can be seen of the nature of the surrounding country, and except where the reaches are shallow, and consequent sand banks attracts swarms of waterfowl, there is not much animal life noticeable. Here, perhaps, an occasional hippo

A Punt on the Maputa River (Portuguese East Africa).

The Pongola River, Amatongaland.

protrudes a ponderous head, to stare curiously at the invader of his realm, or there, two black knobs, apparently floating, a foot or two apart, denote the presence of a silent but watchful crocodile. Outwardly nature is all dreamy tranquillity, only the occasional scream of a predatory fish eagle, breaking in on the monotonous dip of the paddles, and the lilt of the boatmen's song, strikes a slightly incongruous note, and reminds the hearer that the peace is only apparent, and that the struggle for existence still goes inexorably on. In the early morning and late evening, flocks of ducks and geese, proceeding to and returning from their feeding grounds, come flighting up or down the river, and often afford good sport. Fishing may also be profitably indulged in during the occasional rests, though the noise made by the paddlers usually obviates any chance of success during the journey itself. It is not unusual, especially when the canoe is passing close to a reed bed, for a startled fish, impelled by its evil genius, to leap on board, when, for the moment, there is a cessation of work and much laughter and chaff, as the nearest boatman grabs frantically at the intruder as it jumps and bounces about his feet.

African native boatmen are seldom silent at their work; they have a large and varied selection of vernacular songs, many of which are provided with very catching refrains. The soloist chants his part in the curious monotone so characteristic of all native melodies, and at the end of about every two lines the others join in a lusty rhythmical chorus delivered with the full power of their robust lungs. Though the words of each song have a reiterative tendency, which is apt to become wearisome, the general effect of the wild, strange music is most striking and picturesque. Indulgence in song by natives is, at any time, a satisfactory indication of contentment with their work and general conditions. I witnessed a rather impressive spectacle years ago on the Kwando, when one of the tributary chiefs came to visit a Barotse delegate. About forty large dug-outs, two abreast, and crowded with men, slowly emerged into view from behind a reedy islet. The paddlers, erect in their canoes, raised and dipped their long paddles as one man; while, in perfect time with the strokes, a deep chorus from hundreds of throats rolled out across the water. At the landing-stage the canoes formed up in a solid mass, and the visiting chief, sheltered by a white cotton trade umbrella, stepped ashore to greet his host amid a roar of applause from the combined retinues. I was less pleased with a ceremony which took place later, when, in order to do honour to the occasion,

a native minstrel, equipped with a single-stringed instrument, wh
he never ceased to twang unmercifully, kept up an interminable
monotonous chant from sunset until sunrise.

The Swahili boatmen of the upper Nile, as they bend to their l
sweeps, chant some very musical choruses, but these songs, bear
as most of them do, the impress of European civilisation in t
metre and composition, lack much of the fascination present in
wild ballads sung by true savages.

There is much charm in camping at night on the banks of s
great river. Hippos splash and snort, bullfrogs croak, and crick
chirp ceaselessly: a thousand-and-one strange nocturnal sounds
borne to the ears: everything that walks or flies or creeps by ni
adds its quota to the orgy of noise, as if to make up for the enfor
quiet of the last twelve hours. Mingling with the hoot of the
and the note of the nightjar, the strange cry of the hyrax, like s
child in distress, comes from the recesses of the forest. A jac
barks close by, and there is a rush of hoofs as a herd of game on
way to drink suddenly catches sight of our camp fires. Then fr
far away there comes a deep throbbing note, rising and falling on
night air; and actually, or in our imagination, all other noises
immediately hushed, for the king of the forest is abroad. Anon
droning hum of the mosquitos assumes precedence of all else, a
thus recalled to the need of practical action, we escape with all
speed to the shelter of our net.

Though travelling by litter, or *machila*, as it is termed in Portugu
territory, has never found much favour in British Africa, the trave
would nevertheless, failing wheeled transport, do well to prov
himself with one before starting upon a long expedition. In ca
of sickness or accident it will be found a great comfort, has
improvised conveyances of the nature being seldom very satisfact
The Portuguese *machila* is a stout canvas hammock, slung in
usual manner by strong cords from a bamboo pole of twelve
fourteen feet long. Above the centre of the pole is arrange
canvas shade stretched on a framework, which is so constructed t
it can be lowered to each side according to the position of the sun
is provided with all-round curtains. The litter is carried by relay
natives, two or four at a time. The bearers place themsel
alternately on each side of the pole, shoulder the extremities,
move off at a fast walk or a jog-trot of from four to five miles
hour. Every few minutes they are relieved by a fresh team wh
trots alongside and takes over the burden without checking the p

Machila Travelling.

Yao Porters in Portuguese Nyasaland.

The usual complement of bearers is twelve or fourteen for a long journey or where speed is a consideration; but when the *machila* is travelling empty two men suffice, and small odds and ends required on the march can be placed inside. *Machila* travelling is quicker than ordinary walking, and the sportsman who wishes to go out shooting after arrival in camp will be in better trim to do so after having been thus carried along than he would be on the conclusion of a long day's tramp on foot. Nevertheless, it is to my mind an uncomfortable means of progression to a healthy man; there is a sense of helplessness, and it is unsuited to forest country unprovided with wide roads. Along the narrow tracks which usually serve as means of communication in savage Africa the thorn bushes are likely to lacerate not only the bearers but the recumbent form inside as well. Should one of the natives happen to stumble, or should the litter be dropped owing to some scare, there is the not remote chance of the occupant falling heavily on a rock or stump, and sustaining serious injury. The Portuguese in past days incurred more than one severe military disaster, when ambushed by hostile natives, owing to their inveterate custom of riding in *machilas*.

In countries where good roads have been constructed, such as British Nyasaland and Uganda, a bicycle may often be used with considerable advantage. The caravan can be sent on ahead early, with orders to halt and make camp at a certain place; the traveller meantime, after having breakfasted, going out for a morning shoot with the comfortable knowledge that he can overtake his belongings when he likes. He will, of course, retain enough attendants with him to bring on such kitchen paraphernalia as may be required for breakfast, and possibly luncheon. Where roads are bad, or non-existent, a bicycle is more a hindrance than a help. It is sound policy for the traveller to attend to the requirements of his machine himself, or, at all events, to personally supervise such attention as it receives from native servants.

Riding is certainly the most delightful way of travelling in Africa. Unluckily, it is not in every part of the continent that a horse, or even a mule or riding donkey, can be obtained or used. Tsetse fly and horse-sickness render its employment impossible over vast areas of country. "Salted" horses, that is, horses which have gone through and recovered from horse-sickness, are invariably expensive and difficult to obtain. They are, moreover, subject to occasional relapses of the disease, indicated by their heaving sides and distressed breathing. During such recurrences they must on no account be

worked, otherwise death will probably result. No reliable cure is present known for horse sickness, though various remedies a recommended. The two types of the malady popularly recognised a merely different outward symptoms of the same disease. In the fo known as *dik kop* in south Africa the head becomes much swoll and the animal dies of heart failure resulting from overstrain of t organ. In *dun kop*, on the other hand, death is due to suffocati caused by the immense quantities of frothy mucus coughed up fr the lungs into the windpipe. Any treatment given should aim encouraging the action of the heart and the skin by means stimulants and aids to perspiration. In spite of all remedies, at le ninety per cent. of the cases terminate fatally. For *nagana*, as t disease communicated by the tsetse fly is called, there is at present cure, and no such thing as immunity or recovery. Animals attack gradually waste away and die with the oncoming of the first rains not before. The only safety is to keep clear of fly areas, or, if a b must be crossed, to endeavour to get through it by night when t flies are inactive. Horse-sickness attacks all equines, though donke are almost immune from it, while *nagana* is fatal to practically domestic animals.

Where conditions are favourable, and the traveller can therefo avail himself of the aid of a horse or mule, he should not hesitate do so. The wallets and saddle-bags can be filled with all the fo necessary for several days; a blanket can be carried under the sadd and a mackintosh or greatcoat strapped in front; a small kettle "billy" and a cooking pot complete all that is needful to render t rider self-contained and equipped at all points. Grain can almo always be obtained at native villages, and the African horse c besides do very well for a time on grass alone, if lightly worked.

Across open country, and over good roads, the canter and t amble (or tripple) are the best paces for getting over the groun but on the narrow forest paths, which form the only highwa through so much of the continent, it is usually possible to proce only at a walk, and it will then be found of advantage to have native in front for the purpose of cutting away thorn branches a other impediments likely to inconvenience the horseman.

It is best to dismount and walk on foot for at least fifteen minut out of every hour during a long march, for thereby not only is t horse's back rested, but the rider's own limbs are stretched and eas also. The saddle should be slipped off and the animal allowed roll every two or three hours. Though every opportunity of drinki

should be afforded to the latter during the march, as a matter of fact old seasoned trek-horses, if in good health and condition, do not drink much during a journey, and if well watered in the morning or soon after starting, seldom, unless the day is very hot, require much before reaching camp. Two feeds per day, each consisting of from two to four pounds of grain, is usually ample for an African pony, provided that he is permitted to graze at every halt. Fodder should be cut at night if he is fastened up in camp. Grooming, except of the most perfunctory nature, is unnecessary when a natural life in the open is being led. In Africa, I personally, like to rug up my horses at night when they have to stand in the open; but this is to some extent a matter of taste. The custom no doubt partially protects them from the assaults of the biting insects which are then abroad, and to whose attacks horse-sickness is generally ascribed. If it is the case that mosquitos prefer to assail a horse's nostrils, then the old theory that keeping on the nose-bag between sunset and sunrise conduces to ward off horse sickness contains some sound reason. In standing camps I think it is well to construct a rough reed and grass stable. There is no doubt that in tropical Africa horses thrive far better when under some sort of shelter at night—no matter how rough it may be—than when left to stand in the open.

Shoes are unnecessary luxuries in the veld, and once they have got over the initial tenderness horses are better without them. Always, however, be careful to dismount and lead an unshod horse over stony or rocky ground. When a long journey is in prospect a few simple medicines, such as linseed oil, turpentine, and so forth should be carried with the heavy baggage; and, as no veterinary surgeon will be available, the traveller, unless himself an expert, should be provided with some reliable work on horse doctoring.

Personally examine the back every night, and very carefully, for the slightest signs of gall or swelling, and should such be present, and but one horse available, be content to use your own legs for the next day or two.

Marching on foot is, however, generally speaking, the usual means of getting about in the wilder parts of Africa. It is of all methods the best for keeping a man hard and in good health. The great point to attend to is care of the feet. Early in a journey, while they are still inclined to be soft, it is not a bad plan to soap them well before each day's march. Two pairs of socks are sometimes efficacious in preventing blisters. During a march, if the slightest uneasiness is felt, boot and sock should be removed without delay, and the place

examined. If signs of rubbing are apparent, and the abrasion has no been caused by a crease in the sock, it will be best to put on anothe pair of boots at once, as thereby the pressure on that particular plac may be eased. Be careful not to overtire yourself by too lon marches at the commencement of a journey, while the muscles ar still soft. Get into the way of always marching at the same pace; is remarkable how mechanical it becomes after a time, and ho exactly distances can be computed. About three miles an hour is reasonably average rate; I have known men who could keep up nearl four day after day, but they were exceptional. Major Gibbons native name while in Barotseland was, being interpreted, "the ma who walks so fast that no one can keep up with him," and he certainl always did his best to act up to his reputation.

Plenty of boracic acid should be carried, and the inside of th boots well sprinkled with it. A blister on the foot is so great a mi fortune to the traveller who is obliged to walk that no precautior against its occurrence should be omitted, and I wish to emphasise a strongly as possible the care of footgear recommended in the la chapter.

Of course at the present day, in certain easily accessible parts Africa, many of the above hints will be superfluous. The sportsma having in view a short pleasure trip of a few months to such place will usually enlist the services of some reliable local firm of outfitter who will undertake all responsibilities, that of the sportsman himse being confined to paying the bill. Whether in such *expéditions luxe* it is possible to taste the keenest delights of African travel mus remain a matter to be judged by each individual according to h personal temperament and inclinations. It may be that somethin of interest is sacrificed to freedom from care. At any rate, to hi who would undertake a serious expedition in remoter regions, th successful attainment of his object and all it implies will depen upon the smooth working of his transport, whatever its nature, an by personally attending to its well-being he will be amply repaid.

APPENDIX

1. TSETSE FLY AND BIG GAME.

2. THE GAME LAWS OF BRITISH POSSESSIONS IN AFRICA.

From *The Delagoa Bay Gazette*, February, 1911.

THE TSETSE QUESTION.

Considerable interest has recently been aroused over the discovery that "sleeping sickness" is apparently spreading southwards into Rhodesia and Nyasaland, a region beyond the range of *Glossina palpalis*, the usual transmitting agent. Other species of *Glossina*, however, do exist in the southern portions of Africa which will probably be able to act as the transmitters. The public is rightly concerned over the matter, and is anxious to find some method of preventing the spread of this dread disease, as well as the related diseases of domestic animals. In south Africa the idea that tsetse fly is always and inseparably connected with large game, and especially the buffalo, has obtained wide credence. There are two sides to the question which should be placed before the public. Several people have recently indulged in newspaper correspondence upon this question, but, with one or two exceptions, they have given very few illustrations to prove their contentions, and many phases of the subject have been quite overlooked.

To correctly understand the question at issue, a few notes on the habits and development of tsetse flies, so far as we know them at present, will not be amiss. First of all, as everyone knows, they are blood-sucking flies. Although some evidence has been brought forward to show that when animals are not present in fly belts the fly is able to exist on the juices of plants and fruits, their usual food by preference is the blood of animals, and includes that of anything from mammals to crocodiles and birds. Obviously, as tsetse are active only during the warmer portions of the day, they probably feed only on animals which are active during the day, and rodents, ichneumons, bats, etc., which are active at night, would seldom serve them as food. The tsetse flies are structurally formed for sucking blood, and are unable to feed in any other manner. It is a question which must still be probed by actual observation whether they are so formed as to be able to pierce the hard cellulose of plant tissues.

Mr. Austen records a statement from east Africa regarding the existence of a fly belt in a region where a severe drought had driven away all the game. The fly still remained after a lapse of considerable time, and apparently fed on the juices of plants. Probably, however, this occurrence could be explained by the ability of the fly to exist for a long time without food, and possibly also to

reproduce without a meal of blood. We may therefore conclude that under all normal conditions the tsetse fly exists by sucking the blood of vertebrates.

Tsetse flies are usually found in close proximity to water and where there is plenty of shade, preferably bush with plenty of undergrowth. *Glossina palpalis* of east and central Africa, the usual transmitter of sleeping sickness, is practically always found close to water and in dense shade. The south African forms of *morsitans* and of *G. pallidipes* are usually found in similar localities, but do not seem to always need water or as much shade. Kinghorn and Montgomery say that in Rhodesia they found *G. morsitans* scattered all over certain districts, and often from three to ten miles from the nearest water. The shade afforded by the bush in those regions is very thin and scraggy and during the dry season is almost nothing. They found no fly, however, in absolutely open country. *Glossina fusca*, which is suspected of being able to transmit sleeping sickness, and which occurs in Nyasaland and sparsely in this Province is found in places similar to the haunts of *G. palpalis*.

While needing water they do not seem to need it in large bodies, nor are they ever found in swampy regions. Dry soil seems necessary for the development of the young, as will be shown later on. Fly belts are often found around extremely small pools of water. The writer has found them about pools not more than thirty feet long by ten to fifteen feet wide. We may take it, however, as a safe conclusion that tsetse fly is usually found along streams or other bodies of water, but not in swampy regions, and where fairly dense shade also exists, but never in open grass lands. This, then, is the reason why we find it confined to belts or limited areas. The conditions which it prefers are seldom of very great extent.

Even where there is a large extent of country where tsetse can exist, we usually find them in small belts or isolated groups, although they may shift from portion to portion of this area. This is caused by a certain social characteristic common to nearly all kinds of flies. They are not strictly social, that is, they do not live in a community rendering mutual assistance to each other, but they prefer to live in close proximity so as to enjoy the social privileges of near neighbour.

Like most flies, tsetse are most active during the warm portions of the day. In Zululand Bruce found that about sunset was a favourite time for the fly to feed. During cold weather they may be sluggish during the cold portions of the forenoon and afternoon, but in summer they may bite any time during the day. On hot moonlight nights, however, they may bite during the night, so that the old theory that cattle could be driven through a fly belt at night without being bitten does not always hold true. The abundance of fly also varies with the season. These characteristics may have influenced the reports of many travellers regarding the presence or absence of fly in certain areas. Travellers and hunters are not often scientists, and are not always able to give due weight to the many factors which enter into such a question as this; consequently we have many conflicting reports.

Glossina is seldom found above an elevation of 3,000 feet, probably because it becomes too cold and dry at those elevations. As we go northward in Africa, however, we find that they may occasionally be found at a greater altitude, where the closer approach to the Equator renders such elevations warmer. In south Africa they are found in the belt of low country along the east coast, but do not extend farther south than Zululand. As we come northward they extend farther inland into the low country of the eastern and northern Transvaal and into

Rhodesia. We see, then, that tsetse is found only where the suitable conditions of temperature and moisture prevail.

Tsetse does not fly far from its belts. It is usually estimated that *G. palpalis* will not go more than 300 yards. This, however, is not always the case. One investigator in Uganda found that marked flies wandered at least a mile along a river from the place where they had been liberated. This was through dense bush of the sort which they prefer. Fly may easily follow animals for long distances if they pass through bush country, but when they enter open grass country they will rarely follow any distance. The shade offered by an umbrella, hat, or jar of water, or bundle on the head may offer enough shade to protect an engorged fly for some time, and it may be transported there by native carriers some distance. Such conditions may account for the occurrence of occasional flies in unexpected places, but the question of whether they can settle in the place to which they are taken and multiply there is determined by the food supply and conditions of water and shade in that place. *G. morsitans* seems to be able to wander more widely from its chosen haunts than *G. palpalis*, and often follows game and other animals several miles from a fly belt.

Many people still believe that the tsetse fly, like the "biting stable fly," (*Stomoxys calcitrans*) develop in the droppings of buffalo and other large game. This has been quite disproved by the work of Bruce in Zululand. The tsetse has a very great dislike for fœcal matter of any animal. The natives in one portion of Africa are said to smear their cattle with some such substance to keep off the tsetse. The reproduction of the tsetse, at least of *G. morsitans*, is very remarkable and unusual for a fly. It lays no eggs, but produces alive a maggot nearly as large as the abdomen of the mother fly. This maggot never feeds but immediately seeks a suitable hiding place. Here it soon turns dark brown in colour, and becomes an elliptical-shaped hard-cased pupa. After about six weeks, if the soil is dry, the adult fly emerges from this puparium.

Connection between Game and Tsetse.

The theory that tsetse fly is never found without game, especially the buffalo and some "large game," is firmly believed by many people. Old hunters, who, while they are keen observers, have seldom been scientifically trained, firmly assert that tsetse cannot exist without buffalo, or, at least, large game, and that buffalo is never found without tsetse. Selous has written much on this subject, and a statement from his most recent book, "African Nature Notes," will serve to show the nature of these statements. On page 151 he asserts that the tsetse of south Africa (*G. morsitans* and *G. pallidipes*) has become so highly specialised that it cannot maintain itself on the blood of any other animal than the buffalo. He goes on to say: "It can be shown that wherever tsetse flies were first encountered by the earliest European travellers in south Africa there also buffalos were either constantly present or visited such districts during certain months of every year, and that as soon as the buffalos were either exterminated or driven out of any such territories a remarkable diminution in the number of the tsetse flies was at once observed, while in a very few years after the complete extinction of the buffalos these insects entirely ceased to exist, even though other kinds of game remained in the country for years afterwards." As a concrete illustration I will quote the following from the same book: "In 1845 Mr. William

Cotton Oswell—the well-known traveller and hunter—encountered tsetse fly on the Mahaliquain River, a tributary of the Limpopo, running through the northern Transvaal, and it is an historical fact that at that time the whole of the northern Transvaal lying between the Waterberg and Zoutpansberg ranges and the Limpopo, as well as a large area of country lying to the north of that river, was the haunt of great herds of buffalos, and that the banks of every river draining the territory, as well as many tracts of forest lying between these rivers, were at the same time infested with tsetse flies."

"In 1871 the well-known traveller Mr. Thomas Baines, as he has recorded in his book, "The Gold Regions of South-East Africa," still found the tsetse fly numerous on the Maghaliquain River, as well as in the neighbourhood of the Macloutsie and Shashi Rivers, and in many other places throughout the valley of the Limpopo."

"In the following year, 1872, I visited Matabeleland for the first time, and it is within my own knowledge that at that time buffalos were still plentiful in many parts of the valley of the central Limpopo."

"About this time the natives of every tribe in south Africa were acquiring guns and ammunition in immense quantities in payment for work in the recently discovered diamond mines. The first result of the acquisition of firearms by the natives of the northern Transvaal and the countries farther north was the destruction of all the buffalos throughout the valley of the Limpopo to the west of the Tuli River; and it is a well-known fact that in a very few years after the dissappearance of the buffalos from this large area of country the tsetse fly had also absolutely ceased to exist."

"Yet for years after the disappearance of both buffalos and tsetse flies from the valley of the central Limpopo and its tributaries, other game, such as zebras, koodoos, wildebeest, waterbucks, impalas, and bushbucks, continued to exist in considerable numbers. I myself found all these animals still fairly numerous in 1886 along the Maghaliquain River, as well as on the Limpopo itself and along the lower course of the Macloutsie and Shashi Rivers, and it seems to me that there can be no doubt that after the buffalos had been exterminated the tsetse flies gradually died out, because they could not maintain themselves on blood of other kinds of game."

This will serve as an illustration of the argument which certain of the public put forward, who desire for some reason to see all of the game slaughtered off.[1] We might take up the various points brought forth by these quotations. In the first place, because buffalo was found everywhere where fly was found is no proof of the fly being dependent upon it for its existence. If it were why did the fly prove such a menace to man and other animals passing through its

[1] The conclusions arrived at by Mr. Selous as the result of his unrivalled experiences in Rhodesia were, however, in every way justified by the apparent conditions in pre-rinderpest days. His writings show that even then he exonerated large game, with the exception of buffalo, from responsibility for the presence of tsetse. The sections of the public referred to by Mr. Howard have nevertheless eagerly pounced on such of his remarks as have suited their case, and have discarded or slurred over such as have not. Mr. Selous' opinions on the whole subject are clearly set forth in his letter to the *Field*, of August 19th, 1911.—AUTHOR.

belts? If they had reached such a stage of specialisation, they would not bite any other animal except on the rarest occasions. It has been quite conclusively shown that even the south African tsetse can exist on blood other than that of the buffalo. Many tsetse belts still exist both in this Province and in Rhodesia, where no buffalo has survived. In a recent letter to the *Guardian* the English Consul has pointed out that he knows many places where fly exists in this Province, but in which no game has occurred for years. Major Hamilton, two years ago, crossed Portuguese Nyasa from the sea to Lake Nyasa. In the first half of this journey he found *G. morsitans* in several places, but no game. In the interior, after he had crossed the Lujenda River, he found that large game, including buffalo, became plentiful, but no tsetse was present. The first half of the route toward the sea was rather dry and little water was found.

The fact that buffalo became connected in thought with the tsetse seems more or less of a coincidence. Probably had it not been for the belief that tsetse bred in buffalo dung, their connection would not have occurred to any one, and some other large game animal might as easily have been incriminated. Buffalo in those early days were extremely numerous throughout south Africa, and the places chosen by the tsetse would be exactly the places where the herds would like to centre. Vast stretches of country in south Africa, however, supported huge herds of buffalo and other large game, where tsetse has never been able to exist. As already pointed out, they can only exist where the proper conditions of temperature and moisture prevail. The cold inland plateau of south Africa, while offering excellent grazing for game, was too cold and dry for tsetse.

With regard to other species of game, we know that certain animals prefer certain localities and conditions. The flies vary in their habits according to their species. Some species may prefer just those places chosen by certain species of game. As we use the terms "tsetse" and "fly" for all species of glossina, the numerous reports have seemed to show that tsetse must have large game in order to exist.

In considering the cases where the buffalo was killed off and tsetse disappeared, we must remember that we as yet know very little about the bionomics of the fly, and there may have been other reasons which caused this disappearance. Until recently our whole information concerning tsetse was gleaned from the report of hunters and travellers, men usually without scientific training, who would be able to judge only on the circumstantial evidence and who did not search for and take into consideration the many apparently obscure factors which would affect such a question. We know that in fly belts the exact location and numbers in a swarm of tsetse varies from year to year, perhaps due to weather and climatic conditions. Knowing how the fly reproduces, it would be no surprise to find that pupae were killed by excessive rains or cold, or some other factor such as insect parasites.

Selous says that other game than buffalo remained, but he does not say in how great numbers, or whether it remained stationary or not. A herd of game wandering from place to place would hardly furnish enough blood for a swarm of tsetse to flourish and increase upon.

The writer had the privilege a year ago of visiting two regions in Rhodesia where it has been stated that buffalo and other game disappeared and with it the tsetse. At this time there is still some tsetse there, but game is extremely scarce as we found when it came to supplying meat for the pot.

The statement that tsetse breeds in dung has long ago been disproved, and need not be further discussed.

That the fly is dependent on other large game than buffalos has been, I think, also clearly disproved. Several cases have been already quoted. All the investigators agree that tsetse will feed on any animal from man to reptiles and lizards. They are often found around crocodile banks, and hippo runs, and Kock suggested that the crocodile was the reservoir for sleeping sickness trypanosomes. Probably any animal which is about in the day-time could furnish a meal of blood for a fly. Several cases are on record where flies (*G. morsitans*) have been found about kraals, the only animals on which they could feed being natives, dogs fowls, and perhaps goats. Selous mentions a visit to Zumbo in the year 1882. Both banks, of the Zambesi at that point were full of fly, and cattle could not exist. The only animals at the settlement were pigs and goats, which were driven out every day to feed, and which were undoubtedly the food supply of the tsetse in the vicinity of the village.

The experience of Major Hamilton in Portuguese Nyasa has already been mentioned. Whereas in south Africa the destruction of game by rinderpest a few years ago seemed to reduce the numbers of tsetse, if not exterminate it in many places, in Nyasaland the result does not seem to have been the same. Sir Alfred Sharpe in a recent article says that he could see no difference in the quantity of tsetse in Nyasaland before and after the passing of the rinderpest. The common tsetse fly of Nyasaland is the same as that of south Africa. He also writes as follows in the same article: "I am at a loss to understand how the enormous numbers of tsetse fly which are found in some areas can exist, as in many of these areas game is extremely scarce or almost non-existent. In Nyasaland it is distinctly noticeable that many of the fly areas are almost destitute of game, whereas, on the other hand, some parts of the country where game is most abundant, such as the valley of the Rukuru River, are entirely free from tsetse, and in this locality, as in others, buffalo are fairly abundant. At the north end of Lake Nyasa, before the advent of the rinderpest there were many thousands of buffalo, but no *morsitans*." Sharpe is a very accurate observer, and I think we can trust his observations completely.

In Rhodesia the rinderpest also took off the game. Since then it has increased to some extent, but tsetse has apparently increased to a great extent, and it would seem in a degree by no means commensurate with that of the large game, if it is completely dependent upon this game for its existence.

Another point usually overlooked is that game is apt to wander more or less; while *morsitans* will follow game long distances, other species will not do so. Even *morsitans* will not follow far from the shade of bush. Therefore there must be times, even where game is fairly abundant, when fly must subsist on something other than the blood of large game.

After considering all the evidence now at our disposal it seems evident that tsetse flies are blood-suckers, and that while there seems some evidence that they may exist on substances other than blood, it is their usual food. While the south African evidence seems mostly to indicate that large game furnishes the food supply of the fly, there is considerable evidence in south Africa, and most of the evidence in central Africa, which goes to prove that tsetse is not inseparably connected with large game. We are as yet ignorant about many points in the habits and life history of tsetse flies.

It may be that local variations occur in their habits which have given rise to conflicting stories. Until we have learned more about them through the investigations of trained observers and through experiments, we must withhold our verdict upon this question of the game.

There is another side to this question, however, which is decidedly in favour of the tsetse fly, and which should make one hesitate to recommend the destruction of game. The statement is made that the game animals carry in their blood certain parasites known as trypanosomes, to the effect of which they are immune, but which are transmitted by the tsetse fly from game to domestic animals causing their death. Certain animals have also been proved to harbour the trypanosome of sleeping sickness from which it can be transmitted to man.

While the trypanosomes all possess characteristics in common, *i.e.*, they for the most part live in the blood of animals and are transmitted from one to the other by biting flies, to the exclusion of all other natural means, they differ in many minor points of structure and especially in their effects upon animals. All cause death in a susceptible animal, some towards cattle, others toward camels, etc., possess an immunity, equalling that of wild game for the trypanosomes of nagana. We find many differences between trypanosome of nagana, of which Bruce incriminated the large game as the reservoir, and the trypanosomes now affecting cattle in this Province and in central Africa, not to mention that of sleeping sickness. The effects of most of these trypanosomes upon cattle is quite similar, upon others, for example, goats and sheep, quite different. This has probably given rise to variance in the reports of many travellers about "fly disease."

In many districts where trypanosomosis is prevalent, game is present in very small numbers or absent. Where, then, does the disease get its beginning? Investigation often shows that there is one or more domestic animal more or less immune to the effects of the local trypanosome. It may never be sick, or it may have the disease in a very mild form, and eventually recover, its symptoms giving little clue as to the cause of its disease. In south America trypanosomosis attacks mostly horses, in India cattle, but in south America the cattle rarely suffer, and, like the camel in India, act as the reservoir from which supplies of trypanosomes can be taken to susceptible animals.

Bruce showed the tsetse (*G. pallidipes* and probably *G. morsitans*) to be the transmitter of nagana in Zululand, and there is a great deal of evidence to show that it can transmit other species of trypanosomes of cattle in other parts of Africa. It has also been shown that at least one species of tsetse (*G. palpalis*) can transmit the trypanosome of sleeping sickness to man. The tsetse is, however, not the only blood-sucking fly which can act as a transmitter of trypanosomes. In India the "horse-fly" known here as "hippo-fly" (Tabanidæ), and the "biting stable-fly" (*Stomoxys calcitrans*), are able to perform this function. In south America the *Stomoxys* has been incriminated, and in various parts of Africa both *Stomoxys calcitrans* and *S. nigna* have been proved to be able to transmit certain species of trypanosomes.

As definite illustrations of this point let us come down to cases in this province. In 1908 the writer discovered trypanosomosis in a certain herd of cattle on one of the sugar plantations on the Zambesi. A few months previously some cattle had been brought down from Nyasaland where trypanosomosis of cattle exists. Soon after this introduction the disease began to spread through the herd, ending only

when they were all dead. No tsetse was to be found in the vicinity of the plantation, and natives knew nothing of its presence in that region. The cattle were employed only for work on the plantation and never left it. The only biting flies present were certain species of "hippo-flies," *Stomoxys* and mosquitos. Clearly the reservoir had been introduced from a region where the disease was endemic, and from it had been spread through the herd by means of these biting flies.

Again, last May, near Beira, several herds of cattle were found where infected cattle had been introduced from an endemic area, and immediately after the introduction the disease began to spread through the herds. In one herd the apparent reservoir seemed to be a fine healthy animal in whose blood were found a very few trypanosomes. The only biting flies here were "hippo-flies," *Stomoxys lyperosia*, and mosquitos. Even if there had been tsetse in the vicinity, the cattle could not have come in contact with them, because they did not go far from the plantations, if at all.

Even in the case of sleeping sickness there is a possibility that other biting flies and other *Glossina* than *G. palpalis* may be able to act as transmitting agents. I believe that in one case at least the disease has been transmitted through the medium of some biting fly other than a tsetse. It will be as easy for a fly to transmit these parasites in a purely mechanical method as for a bacteriologist to do so with his needle. Only the favourable conditions are necessary to make it possible.

While it is evident that tsetse flies are responsible for the transmission of these trypanosomata from animal to animal in face of the proved facts, we must admit that other biting flies can also perform this act, and that there are other reservoirs of trypanosomes than wild game. What then will be gained if the tsetse are all destroyed or the game destroyed and the others left? We are only at the beginning of our knowledge of this group of disease of men and animals. Every week is adding some new facts to the sum of our knowledge regarding them. Then, why pass judgment until we have all the evidence before us? At least let the layman accept the facts put forward by those competent to judge, by reason of their training and investigations into these matters, and give the less drastic measures a trial before entering upon so irrevocable a measure as that of slaughtering off all the game.

In conclusion, a few brief notes on the distribution of tsetse flies in this Province may be of interest. There is apparently no fly in the southern part.

There are three belts in Nyasa, one near the Rovuma River, a large one in the centre of the district, and a small one near Port Amelia. In Mozambique district there are two reputed areas, one near Mozambique and one at Mapulã. There will probably be more found farther inland. In Zambesia district there are a large area in Magaza da Costa, two at Leungo, and one near Lake Chirua. In Tate district there are numerous small areas in the northern part of the district along the affluents of the Zambesi River, and one in the eastern extremity, while there are several areas not authentically reported south of the Zambesi. The Mozambique Company probably has fly near Chitamba and Chupanzo, south of the Zambesi River. At Chimgomo, Chimoio, Bamboo Creek, on the Rhodesia border near Nusappa, and on the road between Sofala and Bartholomeu Dias, are fly belts. There have been fly reported from the south-west corner of the Lourenco Marques district in the Swaziland-Zululand corner, but the reports have not yet been verified. Although the Lourenco Marques districts and parts of

Inhambane district were formerly full of fly, there is apparently none there now, unless we eventually find some near the Zululand border.

All the fly in this Province is *Glossina morsitans*, except some *G. pallidipes* in the Zambesia, and two belts *G. fusca*, one in Maganja da Costa and one at Chirugomo between Beira and the Zambesi River.

C. W. HOWARD.

GAME AND FISH PRESERVATION LAWS OF THE TRANSVAAL, 1910.

NOTE.—*Under the Union of South Africa, which is to be established on the 31st May, 1910, the Transvaal Game and Fish Preservation Laws remain in force, but are to be administered by the Provincial Government of the Transvaal and not by the Union Government.*

PART I.

GAME PRESERVATION.

INTRODUCTORY.

Game legislation restricting and regulating the destruction of wild animals and birds is contained in an Ordinance passed under Crown Colony Government in 1905. That Ordinance has been amended by Acts passed under Responsible Government in 1907 and 1909 respectively. The law, as amended, is printed as Appendix I.

The law itself cannot be altered except by the Legislature, but it gives the executive government a wide discretion in arranging details by Proclamation and by regulation.

The regulations in force for the current season are printed as Appendix II., and the substance of current Proclamations is contained in Notes C to G.

The following summary will serve to explain briefly the conditions with which it is essential for the public to be familiar:—

SHORT SUMMARY OF THE GAME LAW.

The animals and birds which constitute "game" are enumerated in a schedule divided into two parts.

The first part of the schedule mentions all Transvaal varieties of the smaller and more common kinds of buck, hares, and the warthog; also the following birds:—All Transvaal varieties of pheasant or francolin, partridge, sandgrouse, guineafowl, bustard, wild duck, and wild goose. These are ordinary game.

The second part enumerates and distinguishes as "big game" the larger and rarer animals and birds, including roan and sable antelope, gemsbok, sassaby, koedoe, hartebeest, zebra, wildebeest, ostrich, and crested crane. The elephant, rhinoceros, hippo, buffalo, and eland, which are also enumerated in Part II., are now practically unknown in the Transvaal except in the Game Reserves.

Lions and leopards are not classed as game, but are regarded as vermin.

The destruction of game is restricted in several ways:

In the first place (*a*): No game whatever may be shot or hunted *without a game licence* by any one except by the owner or lessee of a farm on which the game is pursued.

Secondly (*b*): "Big game" may not, under very severe penalties, be shot or hunted without a special "big game" licence issuable only by the Colonial Secretary (or after Union by the Administrator).

Thirdly (*c*): A game licence only entitles the holder to shoot game during the *open season*. Hitherto the "open" season has been varied from year to year, and has not even been uniform in all districts of the Transvaal in any one year; but from 1910 it is uniform.

Fourthly (*d*): A game licence may restrict the holder to destroying only a given number of either or both sexes of any kind of game.

Fifthly (*e*): The destruction of any particular kind of game may be entirely restricted throughout the Transvaal or in any particular district for a given period. The possession of a game licence does not give the right to pursue or destroy any game so protected; neither can the owner or lessee of a farm destroy game so protected on his farm.

Lastly (*f*): Certain areas are proclaimed as game reserves in which shooting and hunting is entirely prohibited

For particulars under each of the above six headings applicable to the 1910 *season see Notes A to F respectively. Those particulars are* most important, *and must be carefully studied by every intending sportsman.*

These are the direct restrictions on the destruction of game. Though somewhat elaborate, they are carefully designed with a view to giving a reasonable opportunity for legitimate sport while safeguarding, so far as possible, the preservation in reasonable numbers of the game natural to the various districts of the Transvaal.

The indirect restrictions provided by law are designed to prevent the destruction of game from motives other than those of genuine sport, that is to say, from commercial motives.

(i.) Thus, the sale of game meat (whether fresh or dried as biltong) is not allowed unless the meat be sold by the owner or lessee of the land on which the game has been killed. Further, no purchaser of game meat from such owner or lessee may sell it again except under a special licence costing £3 a year. That sale licence is only issuable to a licensed butcher or market master. (See Regulations Nos. 43-47.)

(ii.) Again, the export of game, alive or dead, or of horns, tusks, skins, or hides of game, is only permitted under a special permit to be obtained from the Colonial Secretary (under Union from the Administrator). (See Regulations Nos. 10-15.)

A licence to shoot game does not serve as a permit to shoot game over anybody's property. In the case of land privately owned, proper permission must be first obtained from the owner. In the case of Government farms the magistrate of each district has discretion to issue permits for shooting game on the Government farms in the district specified in the permit. The fee for each such permit is £1 for the whole season and 10s. for one month of a season.

The magistrate of each district may also issue permits to course buck with dogs on the Government farms in their district. The fee for a coursing permit is £3. (*Vide* Regulation No. 2.)

The law (section *eleven*, Game Preservation Ordinance; Appendix I.); provides heavy penalties for *trespass* in pursuit of game.

Certain utility birds, not being game, such as the so-called locust birds, also jays (or rollers), the egret, the wattled starling, and the dikkop, are protected

entirely throughout the Transvaal, and may not be shot or destroyed under any conditions. For a complete list and description of these birds see Note G.

It is necessarily difficult to secure the strict observance by *all* persons of any game law, because by its very nature a game law operates in wild and unfrequented places where the ordinary means of enforcing law are either absent altogether or strictly limited. In view of this consideration, and seeing that game laws are devised solely to foster genuine sport and to preserve the generous gift of an abundance of harmless wild animal life with which nature has endowed the Transvaal, it is clear that he who breaks these laws deserves something more than passive reprobation at the hands of right-thinking people.

Private persons should therefore recognize their special duty in assisting the police to prevent malpractices, and to obtain convictions against offenders. They can give very great assistance by invariably reporting to the police all cases coming under their notice of a breach of the law.

As a reward for giving information leading to a conviction, the Magistrate may pay out half the fine imposed.

In order to facilitate the semi-artificial preservation of game which some landowners carry on by enclosing considerable herds of blesbuck or springbuck on a fenced farm, provision was made in the amending Act of 1909 for the Colonial Secretary to issue special permits to such landowners to shoot a limited number of the males in such a herd during the close season (Schedule O).

Wild ostriches are classed as "big game" and their destruction is absolutely forbidden. In order, however, to foster the bona fide industry of ostrich farming, there is provision in the game regulations for permitting the capture of the young or the taking of eggs of the wild ostrich (*a*) on Government farms (Regulations Nos. 32 to 35); (*b*) on private farms (Regulations Nos. 36 and 37).

The law allows vermin to be destroyed by any means—with certain restrictions on the use of poison. Lion, leopard, cheetah, lynx, hyena, and the smaller wild cats, such as the serval, civet, genet, and kaffir cat, are all vermin, but rewards for destruction of vermin are paid by Government only in the case of the wild dog, the jackal (silver and red), and the baboon, the scale being £1 for a wild dog (the most inveterate enemy and disturber of game), 5s. for a red jackal, and 2s. 6d. for either a silver jackal or a baboon. (See Regulations Nos. 16-20.)

The District of Lourenco Marques and other districts of Portuguese East Africa under the jurisdiction of the Governor-General of Mozambique (Inhambane, Tete, Quelimane, etc.) adjoining the eastern boundary of the Transvaal for several hundred miles, have been well known for the abundance of game which used to be found there. Owing, however, to its rapid destruction, all shooting in those areas has now been prohibited for a term of years.

Special restrictions have been imposed by the Mozambique Company upon the shooting of game in the territories owned by them, and permits to shoot in those territories must be obtained from the Governor of the Company at Beira. The Company owns all that portion of Portuguese East Africa (lying to the north of the territory under the jurisdiction of the Governor-General of Mozambique) bounded on the north by the Zambezi River, on the south by the Sabi River, on the east by the Portuguese-Transvaal border, and on the west by the Indian Ocean; including also a small strip of country immediately adjoining the western boundary of Southern Rhodesia. Persons intending to shoot in the Company's territory are advised first to communicate with the Governor of the Company at

Beira and obtain the fullest information in regard to the existing restrictions upon hunting. The close season for game in the area is from 1st December to 30th April in each year.

Miscellaneous Information Bearing upon the Game Law.

Arms and Ammunition.

Dealers in arms and ammunition, especially licensed, are established in all the larger towns of the Transvaal. They can supply most of the ordinary kinds of arms and ammunition.

The fee for a dealer's licence is £10 for a licence taken out before the 30th June of any year, and £6 for a licence taken out after that date.

To bring a military or sporting rifle and rifle ammunition, or a revolver and its ammunition into the Transvaal, a permit is required from a resident magistrate, but no permit is required for bringing in shot-guns and cartridges, or even for low velocity small-bore rifles known as "saloon" or "rook" rifles.

Every person having in his possession, or becoming possessed of, any description of firearm, whether rifle, revolver, or shot-gun, must register it at a magistrate's office, and, upon registration, pay a fee of 10s. for each rifle and 5s. for each other firearm.

The Chief Secretary to the Government of Uganda advises for the information of sportsmen and others proceeding to Uganda that the importation into that Protectorate of rifles of ·303 calibre and ·450 Martini-Henry rifles, and ammunition for such rifles, is entirely prohibited.

Dogs.

Dogs kept within municipalities are liable for the tax imposed in such municipalities. Owners of dogs kept outside municipal areas must register their animals in accordance with the Registration and Control of Dogs Act (1907) and pay the following yearly taxes:—

(1) For a watchdog (one dog to each house or farm)	Free.
(2) For a dog of the greyhound type, Kaffir hunting dog, or dog of similar breed	£5 0 0
(3) For any other kind of dog	0 10 0

No dog of class (2) can be registered as a watchdog.

Applications for registration certificates should be made to any receiver of revenue or other officer specially appointed to issue such certificates.

Museum and Zoological Gardens Specimens.

The Director of the Museum and Zoological Gardens is glad to receive skins and heads of animals of rarity and interest, or the animals themselves if caught alive; such specimens will be conveyed free through the post or by rail if addressed to the Director of the Museum and Zoological Gardens, Pretoria, and marked O.H.M.S.

A.—Game Licence (Ordinary).

The charges for an ordinary game licence to shoot game are

(i.) for the whole of the normal open season	30s.
(ii.) for one month of the nomal open season	15s.
(iii.) for each month of the special open season in the Districts of Waterberg and Zoutpansberg, and in Secocoeniland for warthog, hare, and guinea-fowl	5s.

(*Game Regulations, Schedule J.*)

Any game licence can be obtained from any receiver of revenue.

The licence is issued subject to the following conditions which are printed at the back of the licence form :—

(*a*) It is not transferable by the person to whom it is issued.

(*b*) It must be produced on the demand of any police officer who may require the holder to give his signature afresh for comparison with that endorsed below (*vide* regulation 41 of the Game Regulations).

(*c*) It is liable to be cancelled by the court on conviction of the holder for a contravention of any provision of the Game Laws or Regulations.

(*d*) It is valid for the period for which it is issued and no longer.

(*e*) It does not entitle the holder to hunt those particular kinds of game mentioned in Part I of the schedule which are from time to time specially protected by Proclamation in any district.

(*f*) It is not lawful to capture or destroy game under such licence by means of nets, springes, gins, traps, snares, sticks, or poison.

(*Game Regulations, Schedule K.*)

With each licence is issued a leaflet showing the various species of game which have been specially protected by Proclamation in the Transvaal.

B.—Big Game.

The charge for a big game licence is £25, but no such licence has been issued for the last five years, and in view of the great scarcity of the animals classed as big game it is quite improbable that any application for a big game licence is likely to be successful. The exemption from taking out a game licence for ordinary game which is allowed to the owner or occupier of a farm in respect of game on that farm does *not* extend to big game. Thus the destruction of any kind of *big* game is in fact prohibited throughout the Transvaal.

(*Game Regulations, Schedules K and L.*)

C.—Open Season.

The normal open season for game in all districts of the Transvaal is :—

For all game—from 1st May to 31st August (both dates inclusive) in each year.

In the district of Waterberg, the area known as Secocoeniland (*i.e.*, Ward Secocoeni, in the Middelburg District, and that portion of Ward Steelpoort, of the Lydenburg District, lying on the north side of the Steelpoort River), and the District of Zoutpansberg [*not* including the portion of that district connecting the Sabi and Singwitsi Reserves—see map,[1] also Note E, Schedule of Protected Game (Zoutpansberg)] there is an *additional open season* for Hare, Warthog, and Guinea-fowl from 1st April to 28th February [both dates inclusive—Proclamation No. 16 (Admn.) 1910].

D.—Limitation on Numbers and Sex of Game.

The holder of a game licence may be limited to shooting a given number of any particular kind and sex of game, animal, or bird.

For the open season 1910 *no such limitation* has been prescribed.

[1] See map in Chapter III. of text.

E.—Transvaal Game Animals and Birds Protected to 31st December, 1912.

[Proclamation No. 17 (Admn.) 1910, in the form of a tabulated statement.]

N.B.—Where P stands under the name of an animal or bird and opposite the description of a district or area, both male and female of the animal or bird are protected in that district or area.

P* denotes that the female only is so protected.

	GAME ANIMALS.																GAME BIRDS.				
	Blesbuck.	Bushbuck.	Duiker.	Duiker (red).	Grysbuck.	Klipspringer.	Oribi.	Pallah (roolbuck).	Reedbuck.	Rhebuck (rooi).	Rhebuck (vaal).	Springbuck.	Steenbuck.	Waterbuck.	Warthog.	Hares (all varieties).	Blue Bustard (blue Knorhaan).	Kori Bustard (Gompauw).	Bush Bustard (bush Knorhaan).	Bustard (vaal) (vaal Knorhaan).	All varieties of Pheasants and Francolin (Francolinus and Pternistes).
Bloemhof (whole district, except Ward Schweizer Reneke)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	—	—	P	P	—	—	—
,, Ward Schweizer Reneke	P	P	P	P	P	P	P	P	P	P	P	P	P	P	—	—	P	P	—	—	—
Wolmaransstad	P	P	P	P	P	P	P	P	P	P	P	P	P	P	—	—	P	P	—	—	—
Lichtenburg	P	P	P	P	P	P	P	P	P	P	P	P	—	P	—	—	P	P	—	—	—
Potchefstroom (whole district, except Klerksdorp Sub-district) ..	P	P	—	P	P	P	P	P	P	P	P	P	P	P	—	—	P	P	—	—	—
Potchefstroom, Klerksdorp Sub-district	P	P	P	P	P	P	P	—	P	P	P	P	P	P	—	—	P	P	P	P	—
Marico	P	P	—	P	P	P	P	P	P	P	P	P	P	P	—	—	—	P	—	—	—
Rustenburg	P	P	—	P	P	P	P	P	P	P	P	P	—	P	—	—	—	P	—	—	—
Krugersdorp	P	—	—	—	—	—	P	—	P	P	P	P	—	P	—	—	P	P	P	P	—

[Proclamation No. 17 (Admn.) 1910, in the form of a tabulated statement.]

N.B.—Where P stands under the name of an animal or bird and opposite the description of a district or area, both male and female of the animal or bird are protected in that district or area.

P* denotes that the female only is so protected.

	GAME ANIMALS.																GAME BIRDS.				
	Blesbuck.	Bushbuck.	Duiker.	Duiker (red).	Grysbuck.	Klipspringer.	Oribi.	Pallah (rooibuck).	Reedbuck.	Rhebuck (rooi).	Rhebuck (vaal).	Springbuck.	Steenbuck.	Waterbuck.	Warthog.	Hares (all varieties).	Blue Bustard (blue Knorhaan).	Kori Bustard (Gompauw).	Bush Bustard (bush Knorhaan).	Bustard (vaal) (vaal Knorhaan).	All varieties of Pheasants and Francolin (Francolinus and Pternistes).
Johannesburg	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pretoria (whole district, except undermentioned area)	P	—	—	—	—	—	P	P	P	—	—	—	—	P	—	—	—	P	—	—	—
„ That portion of the district south of the Rustenburg-Pretoria-Middelburg railway line	P	—	—	—	—	—	P	P	P	—	—	P	—	P	—	—	—	P	—	—	—
Germiston	—	—	—	—	—	—	P	—	P	—	—	—	—	P	—	—	—	P	—	—	—
Boksburg	—	—	—	—	—	—	P	—	P	—	—	—	—	P	—	—	—	P	—	—	—
Heidelberg	P	—	P	—	—	—	P	—	P	P	P	P	—	P	—	—	—	P	—	—	—
Bethal	P	P	P	P	P	P	P	P	P	P	P	P	P	P	—	—	—	P	—	—	—
Standerton	—	—	P	—	—	—	P	—	P	P	P	—	P	P	—	—	—	P	—	—	P
Wakkerstroom	—	—	—	—	—	—	P	P	P	P	P	P	—	P	—	—	—	P	—	—	—
Ermelo	P	—	—	—	—	P	P	P	P	—	P	P	P	—	—	—	—	P	—	—	—
Carolina	P	P	—	—	—	P	P	P	P	—	P	P	P	—	—	—	—	P	—	—	—
Piet Retief	—	—	—	—	—	—	P	P	P	P	P	—	—	P	—	—	—	P	—	—	—
Barberton (whole district, except Wards Komati and White River)	—	—	—	—	—	—	P	P*	P	P	—	—	P	P	—	—	—	P	—	—	—
„ Wards Komati and White River	—	—	—	—	—	—	P	P*	P	P	—	—	—	P	—	—	—	P	—	—	—

E.—Transvaal Game Animals and Birds Protected to 31st December, 1912—(*continued*).

	Game Animals.																Game Birds.			
	Blesbuck.	Bushbuck.	Duiker.	Duiker (red).	Grysbuck.	Klipspringer.	Oribi.	Pallah (roibuck).	Reedbuck.	Rhebuck (rooi).	Rhebuck (vaal).	Springbuck.	Steenbuck.	Waterbuck.	Wartbog.	Hares (all varieties).	Blue Bustard (blue Knorhaan).	Kori Bustard (Gompauw).	Bush Bustard (bush Knorhaan).	Bustard (vaal) (vaal Knorhaan).	All varieties of Pheasants and Francolin (Francolinus and Pternistes).
Lydenburg (whole district, except Secocoeniland and the Low Country)	P	P	—	—	P	—	P	—	P	P	P	P	P	P	—	—	—	P	—	—	—
Secocoeniland	P	P	—	—	—	—	P	—	P	—	—	P	P	—	—	—	—	P	—	—	—
Low Country	P	—	—	—	P	—	P	—	P	P	P	P	P	P	—	—	—	P	—	—	—
Middelburg (whole district, except area south of Pretoria—Delagoa Bay railway line)	P	—	—	—	—	P	P	P	P	P	P	P	P	P	—	—	—	P	—	—	—
„ Area south of Pretoria—Delagoa Bay railway line	P	P	P	P	P	P	P	P	P	P	P	P	P	P	—	—	—	P	—	—	—
Zoutpansberg (whole district, except undermentioned area and farms):	—	—	—	—	—	—	P	—	—	P	—	—	—	P	—	—	—	P	—	—	—
„ Certain Eight Farms adjacent to Louis Trichardt, viz.:— Nooitgedacht No. 308, Rietvley No. 55, Bergvliet No. 52, Vondeling No. 222, Vygeboomsdrift No. 210, Palmietfontein No. 227, Rondebosch No. 30, Ledig No. 1646.	—	—	—	—	—	—	P	—	P	P	—	—	—	P	—	—	—	P	—	—	—
„ Area between the Singwitsi and Sabi Game Reserves described in Proc. No. 17 (Admn.), 1910	All	Game	Animals	and	all	Game	Birds	are	protected	in	this	area.					—	—	—	—	—
Waterberg	—	P	—	—	—	—	P	P	P	—	—	—	—	P	—	—	—	—	—	—	—

F.—Game Reserves.

The areas which have been proclaimed Game Reserves are shown on the map.[1] The following is a detailed description of the various areas:—

The Pretoria Reserve.

The Town Lands of Pretoria, including the farm Groenkloof.

The Pongola Reserve.

The area within the following boundaries in the District of Piet Retief, *i.e.*,
on the north, Swaziland;
on the east, Zululand;
on the south, the Pongola River;
on the west, the farm Rooirandpoort.

The Singwitsi Reserve.

The area within the following boundaries in the District of Zoutpansberg, *i.e.*,
From the junction of the Groot and Klein Letaba Rivers northwards in a straight line to the Levoeboe or Pafuri River at Tshukunas Kop; thence along the course of that river to its junction with the Limpopo River; thence southwards along the Transvaal-Portuguese border to the Olifants River; thence up that river to its confluence with the Letaba River; and thence along the course of that river to the junction of the Groot and Klein Letaba Rivers.

The Sabi Reserve.

The area within the following boundaries, *i.e.*,
From the south-western beacon of Lot No. 333, Section "E," Kaap Block (near Crocodile Poort Station) generally northwards along the boundaries of and including Lots Nos. 333, 332, 331, 327, 317, 328, 310, 277, 274, 192, 194 146, 145, 196, 198, 199, and 200, Section "E," Kaap Block, to the north-western beacon of the last-mentioned lot, continuing with the boundaries of and including the farm Engelbrechtshoop No. 112 to its north-western beacon, Lozies or Logies Kop; thence generally northwards along the boundaries of and including Lots Nos. 134 and 135, Section "F," Kaap Block, to where the western boundary of Lot No. 135 cuts the Zand River; thence northwards down the middle of the Zand River to its junction with the Sabi River; thence eastwards down the middle of the Sabi River to where it is crossed by the old waggon road near Mambatene's Kraals; thence northwards along the said road to where it crosses the Mklasiri River; thence northwards along the middle of the Mklasiri River to its junction with the Olifants River; thence eastwards down the middle of the Olifants River to the Colonial boundary; thence southwards along the Colonial boundary to where it crosses the Komati River; thence westwards up the middle of the Komati River to its junction with the Crocodile River; thence up the middle of the Crocodile River to the south-western beacon of Lot No. 333, Section "E," Kaap Block.

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[1] See map in Chapter III. in text.

NOTE.—*A tract of country connecting the Singwitzi and Sabi Game Reserves is practically a game reserve also, as all game therein is specially protected. See map;*[1] *also Note E, schedule of protected game (Zoutpansberg).*

The Rustenburg Reserve.

The area within the following boundaries in the Rustenburg District:—

From the junction of Rampapaans Spruit and the Great Marico River generally north-eastwards and south-eastwards along the western and eastern boundaries of Rustenburg District to where the latter is cut by the Zand River; thence generally westwards down the middle of the Zand River to its junction with the Crocodile River; thence down the middle of the Crocodile River to its junction with the Bier Spruit; thence generally south-westwards up the middle of the Bier Spruit to where it cuts the eastern boundary of the farm Bierkraal No. 545; thence generally westwards along the boundaries of and including the farms

Bierkraal No. 545;
Kameelkuil No. 813;
Elandskuil No. 814;
Krugerskop No. 179;

to where the southern boundary of the last-mentioned farm is cut by the Rampapaans Spruit; thence generally north-westwards down the middle of the Rampapaans Spruit to the place of beginning.

Reserves may only be entered or traversed by certain prescribed routes, and the regulations on this subject should be carefully studied by any one desiring to enter or pass through a reserve. In the case of the Sabi or Singwitsi Reserves, application for permission to carry firearms or to camp or squat within the limits of the reserves, or for any information in regard to the restrictions existing in these areas, should be made to the Warden, Government Game Reserve, Komatipoort, and in the case of the Rustenburg Reserve to the Resident Magistrate, Rustenburg. No special routes have been appointed for the smaller reserves, the Pretoria and Pongola Reserves.

A full description of the appointed routes through the Sabi, the Singwitsi, and the Rustenburg Reserves are given below:—

ROUTES THROUGH GAME RESERVES.

The Sabi Reserve as defined in Proclamation No. 20 (Admn.) of 1909:—

(*a*) The road from the Blyde River running south-east to the Sabi River and crossing the Sabi River at Mambatenes Drift; thence to Pretorius Kop; thence across the Sagazi River through the "shute," and by the south side of Logies Kop (Legogote) to the Nelspruit Road.

(*b*) The road crossing the Crocodile River at Crocodiles Bridge; thence via Gomondwana to Ntambos Drift; thence passing northwards parallel with, and near to, the Portuguese border by way of Muntyes, Matzi, Jase, Malahane, to the drift over the Olifants River, five miles west of its junction with the Letaba River.

(*c*) The road from Belvedere along the Zand River and Selati Railway to Sabi

[1] See map in Chapter III. of text.

Bridge, and thence along the north bank of the Sabi River to Ntambos Drift.

The Singwitsi Reserve as defined in the Fourth Section of the Schedule annexed to Proclamation No. 31 (Admn.) of 1906:—

(*a*) The road crossing the Letaba River at Steinacker's old picquet or at the drift at Matyupukele's, and passing through Makuba's to Malunzane's, and thence to Birthday.

(*b*) The road which passes north of Birthday and follows the right bank of the Pafuri River past Mhing's villages; thence still follows the right bank of the Pafuri, leaving Zundokop to the east, and crosses the Limpopo River at its junction with the Pafuri River.

The Rustenburg Reserve as defined in Proclamation No. 96 (Admn.) of 1910:—

(*a*) The road from the farm Saulspoort No. 269 running generally west to the farm Laatste Poort van Marico No. 840.

(*b*) The road from the farm Saulspoort No. 269 running generally north to the Crocodile River and crossing the Crocodile River at the drift on the farm Krokodildraai No. 850.

(*c*) The road from the farm Saulspoort No. 269 running north to the banks of the Crocodile River; thence north-west along the southern banks of the Crocodile River and crossing the Crocodile River at Ooliedrift on the farm Staankraal No. 182; thence along the northern banks of the Crocodile River to the junction of that river with the Limpopo River; thence along the eastern banks of the Limpopo River and crossing the Limpopo River at the drift at Palla.

(*d*) The road from Nystroom generally west to the Zand River and crossing the Zand River at the drift on the farm Zandrivierspoort No. 842; thence generally north to the Matlabas River; thence along the southern banks of the Matlabas River to the Limpopo River and crossing the Limpopo River at the drift on the farm Olifantshoek No. 1027.

G.—Utility Birds.

The following is a list of the birds which, on account of their general utility, are protected in all districts of the Transvaal:—

General Utility Birds and Locust Destroyers.

Stork, white-bellied	*Abdimia abdimi*	Grote swarte sprinkhaanvogel
Stork, white	*Ciconia ciconia*	Grote witte sprinkhaanvogel.
Pratincole, black-winged	*Glareola melanoptera*	Kleine sprinkhaanvogel.
Pratincole, red-winged	*Glareola fusca*	Roodvleugel sprinkhaanvogel.
Dikkop	*Oedicnemus capensis*	Dikkop.
Starling, wattled	*Perissornis carunculatus*	Lelspreeuw.
Egret, buff-backed	*Bubulcus ibis*	Bosluisvogel.
Jays: Roller, European (blue jay)	*Coracias garrulus*	Kleine trouwpand.
Jays: Roller, racquet-tailed	*Coracias spatulatus*	Breedstaart trouwpand.
Jays: Roller, mosilikatza's	*Coracias caudatus*	Trouwpand.
Jays: Roller, purple	*Coracias mozambicus*	Grote trouwpand.
Jays: Roller, cinnamon	*Eurystomus afer*	Geelbek trouwpand.

Part II.

FISH PRESERVATION.

FISH.

Native Fish.

There are very few restrictions placed on fishing in any rivers of this Colony. Native fish may be fished for all the year round with rod and line, but a licence is required if it is desired to fish with a net, and there is a close season for such fishing from 16th September to 14th January, inclusive. Licences to fish with a net may be obtained from resident magistrates, the fee being 5s. No licence is required for the use of a landing net in connection with rod and line fishing.

Trout have been introduced into some of the streams of this Colony by the Trout Acclimatization Society (P.O. Box 184, Johannesburg), and special provisions have been made to protect these fish. Any one intending to fish for trout should first consult the Secretary of the above-named Society.

Trout Streams.

The only waters in which trout may be fished for are

(1) the Mooi River (Potchefstroom District), except that portion which lies between the dam of the New Reservoir and the northern boundary of Potchefstroom town lands;
(2) the Florida Dam, near Jonannesburg;
(3) the stream on farm Weltevreden, No. 215, Carolina District;
(4) the stream on Leeuwpoort No. 195, Carolina District.

Trout may only be fished for with fly, and there is a close season for all trout fishing from 1st May to 30th September, inclusive.

APPENDIX I.

Game Preservation Ordinance.

(No. 6 of 1905.)

As amended by the Game Preservation Amendment Act (*No.* 13) *of* 1907, *the Ostriches Exportation Prohibition Act* (*No.* 30) *of* 1907, *the Game Preservation Further Amendment Act* (*No.* 11) *of* 1909, *and Proclamation* (*No.* 15) *Admn.* 1910.

Whereas it is expedient to consolidate and amend the law of this Colony relating to the preservation of game;

Be it enacted by the Lieutenant-Governor of the Transvaal with the advice and consent of the Legislative Council thereof as follows:—

1. The Game Preservation Ordinance 1902 and the Game Preservation Amendment Ordinance 1903 shall be and are hereby repealed.

2. In this Ordinance and any regulations made thereunder unless inconsistent with the context

"game" shall mean all birds and animals named in the Schedule hereto or in such Schedule as amended by Proclamation under section *three;*

"big game" shall mean the birds and animals mentioned in Part II. of the

Schedule to this Ordinance or in such part of the Schedule as amended by Proclamation under section *three;*

"occupier" shall mean any person who is the owner of land or the lessee of land under an agreement in writing with the owner thereof or who has the right of shooting over land under an agreement in writing with the owner thereof;

"hunt" shall mean shooting at pursuing taking killing or wilfully disturbing;

"sell" shall mean selling hawking offering or exposing for sale;

"police officer" shall mean an officer constable or trooper of any police force established in this Colony by any law and in addition shall include any person appointed a warden or ranger of a reserve under regulations mentioned in section *four;*

"close season" shall mean the period from time to time fixed by Proclamation under section *three* within which it shall not be lawful to hunt game save as in this Ordinance provided;

"open season" shall mean any period which is not close season;

"magistrate" shall mean a resident magistrate, assistant resident magistrate, native commissioner, native sub-commissioner, and resident justice of the peace; the term resident magistrate shall mean that officer only;

"court" shall mean the court of a magistrate as in this section defined;

"owner" shall in the case of private land mean the registered owner thereof, and in the case of town lands or municipal lands the town clerk of the municipality, and in the case of Crown land the Commissioner of Lands or any person appointed by him to exercise powers conferred upon an owner or occupier by this Ordinance;

"biltong" shall mean the flesh of game dried for purposes of preservation.

3. The Govenor may from time to time by Proclamation in the *Gazette*

(*a*) add to or withdraw from either part of the Schedule to this Ordinance the names of any bird or animal in respect of the whole Colony or any district or any portion of a district thereof;

(*b*) prescribe, fix, and alter for this Colony or for any district or portion of a district thereof, the period of the close season within which it shall not be lawful (save as in this Ordinance or any amendment thereof is excepted) to hunt any species of game or one or other sex of any species of game; or declare that there shall be no close season for any species of game or for one or other sex of any species of game throughout the whole Colony or throughout any district or any portion of a district thereof;

(*c*) prescribe a list of game which shall be protected in this Colony or in any district or any portion of any district thereof for a specified period (not exceeding three years) and add to or otherwise vary that list;

(*d*) impose a limit in respect of any district or portion of a district of this Colony upon the number of any species or of one or other sex of any species of game which may be hunted under any game licence in any district or portion of a district in this Colony;

(*e*) define reserves within which it shall not be lawful to hunt game without the special permission in writing of the Colonial Secretary;

(*f*) prescribe a list of birds and animals (other than those mentioned in the Schedule to this Ordinance) which on account of their general utility or for other reasons shall be protected from time to time and for such

periods as may be deemed necessary, throughout this Colony or any district or portion of a district thereof.

All Proclamations issued under the authority of the said sections shall remain in full force and effect until withdrawn or altered under the authority of this section.

4. (1) The Governor may from time to time make alter and repeal regulations not inconsistent with the provisions of this Ordinance for all or any of the following matters:—

(*a*) Prohibiting or regulating the capture or destruction of game by means of nets springes gins traps snares or other contrivances and regulating the coursing of game with dogs.

(*b*) Regulating the taking disturbance destruction purchase or sale of the eggs of game and the young of game.

(*c*) Regulating the export from the Colony of game or the horns tusks skins or hides of game.

(*d*) Regulating the destruction of vermin and the payment of rewards for such destruction, and declaring from time to time what birds and animals shall be deemed vermin for the purposes of such regulations.

(*e*) For the protection and preservation of game within any reserve established by Proclamation under section *three* and for the appointment of wardens and rangers of such reserve and the regulation of traffic through such reserve.

(*f*) Regulating the taking of the young of ostriches and ostriches' eggs and generally for encouraging the industry of ostrich farming.

(*g*) Regulating the hunting of game for scientific purposes.

(*h*) Fixing and altering the fees to be paid for any licence or permit issued under this Ordinance.

(*i*) Regulating the manner of issue of licences and permits and prescribing the forms of such licences and permits.

(*j*) Regulating the sale of game or biltong.

(*k*) Regulating the importation into this Colony of game or the horns, tusks, or hides of game.

Any such regulation shall upon the publication thereof in the *Gazette* be of the same force and effect as if it were contained in this Ordinance.

(2) The Lieutenant-Governor may prescribe in any such regulations penalties for a contravention thereof not exceeding a fine of fifty pounds.

5. (1) No person shall save as is excepted in this Ordinance or any regulations made thereunder hunt game during the close season.

(2) No person shall save as in this Ordinance excepted sell game dead or alive during the close season unless the same shall have been lawfully taken during the open season or shall have been imported from oversea, or from some neighbouring Colony.

(3) Any person contravening any provision of this section shall be liable on conviction to a fine not exceeding fifty pounds.

6. (1) No person shall hunt any bird or animal protected by a Proclamation issued under paragraphs (*c*) and (*f*) of section *three*.

(2) No person shall hunt game in any reserve defined by Proclamation under paragraph (*e*) of section *three* without the written permission of the Colonial Secretary.

(3) Any person contravening any provision of this section shall be liable on conviction to a fine not exceeding two hundred pounds.

7. (1) No person shall save as is excepted in this Ordinance or any regulations made thereunder hunt or sell game unless he is duly licensed in accordance with the provisions of the next succeeding section.

(2) The following penalties shall be imposed upon any person convicted of a contravention of this section:—

(*a*) For hunting game (other than big game) without a game licence or for contravening any condition of such licence a fine not exceeding twenty-five pounds.

(*b*) For hunting big game without a big game licence or for contravening any condition of such licence a fine not exceeding one hundred pounds.

(*c*) For selling game without a sale licence or for contravening any condition of such licence a fine not exceeding fifty pounds.

(*d*) For shooting in any district or portion of a district a larger number of any species or of one or other sex of any species of game than the limit imposed by Proclamation issued under paragraph (*d*) of section *three* a fine not exceeding one hundred pounds.

8. Licences may be granted under this Ordinance of the following descriptions:—

(*a*) A "game licence" which shall be issued by any receiver of revenue for a period not longer than one year or for not less than one month and which shall entitle the holder thereof to hunt game (other than big game) during the period of the licence.

(*b*) A "big game licence" which may be issued by the Colonial Secretary to such persons as he may think fit and which shall entitle the holder thereof to hunt such big game and in such numbers as may be mentioned in the licence and on such conditions as may be endorsed thereon.

(*c*) A "sale licence" which shall be issued by any receiver of revenue to any licensed butcher or market master and which shall entitle the holder thereof to sell game or biltong subject to the conditions prescribed by the regulations made under sub-section (1) (*j*) of section *four;* provided that no such licence shall authorize the holder thereof to sell game or biltong in more than one shop store or market which shop store or market shall be named in such licence.

9. The following conditions shall be applicable to and endorsed upon every licence issued in accordance with the provisions of section *eight*—

(*a*) it shall not be transferable by the person to whom it is issued;

(*b*) it shall be produced upon the demand of any police officer;

(*c*) it shall be liable to be cancelled by the court on conviction for a contravention by the holder of any provision of this Ordinance or of any regulations made thereunder;

(*d*) it shall be valid for the period for which it was issued and no longer;

(*e*) any condition authorized by section *eight* for any particular class of licence.

10. Notwithstanding anything in this Ordinance contained it shall be lawful

(*a*) for the owner or lessee of land (not being a native resident upon Crown land or in a location or native reserve or upon land used as a mission station) to hunt without a game licence game upon that land except big game and game which may not be hunted under a game licence in the

district or portion of a district in which the land is situated, and, subject to the regulations made under sub-section (1) paragraph (*j*) of section *four*, to sell without a licence such game or biltong made from such game

(*b*) for the owner occupier or cultivator of land to destroy game theron which is causing damage to trees plants or standing crops;

(*c*) for the person authorized to hunt game for scientific purposes under regulations mentioned in section *four* to hunt such game as may be named in the permit issued to him;

(*d*) for any owner or occupier of a farm, on which game has been confined by fencing, who has first obtained a permit in writing from the Colonial Secretary to hunt, subject to the conditions and during the period specified in that permit, buck mentioned therein for his own use, and whether or not such buck be specially protected by Proclamation issued under paragraph (*c*) of section *three* of this Ordinance; provided that the occupier of that farm shall not be entitled to shoot such buck without the permission in writing of the owner of the farm. Any person who contravenes or fails to comply with any condition attached to a permit issued by the Colonial Secretary under this paragraph shall be liable on conviction to a fine not exceeding fifty pounds.

11. (1) No person shall at any time (whether he is the holder of a licence under this Ordinance or not) be upon any land in pursuit of or in search of game, unless he is the occupier thereof or has the permission in writing of the occupier or if the land be unoccupied, of the owner or if the shooting rights have been leased to some person other than the occupier, of the lessee of such rights.

An person acting in contravention of the provisions of this sub-section shall be liable on conviction to a penalty not exceeding fifty pounds in the case of enclosed land or twenty-five pounds in the case of unenclosed land.

(2) If any person be found at any time on land in pursuit of or in search of game he may be required by the occupier of such land or by any servant or other person authorized thereto by such occupier or if such land be Crown land by a magistrate justice of the peace or police officer to state his true name and place of abode and forthwith to quit such land and if he shall fail to comply immediately with any such requirement he shall be guilty of an offence.

(3) Any dog found unaccompanied by its owner or other person having control over the same in pursuit of game upon land may be destroyed forthwith by or on the order of the occupier of such land.

12. The Commissioner of Lands may in his discretion grant permission in writing to any person subject to any regulations made under paragraph (*f*) sub-section (1) of section *four* to capture the young of wild ostriches upon Crown land or to take the eggs of ostriches and the owner or lessee of any private land may in relation to such land exercise the same powers subject to the regulations aforesaid.

* 13. Repealed by Act No. 30 of 1907.

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* The Ostriches Exportation Prohibition Act (No. 30 of 1907) forbids the export from the Transvaal of any ostrich or ostrich egg, except to a Colony or territory in South Africa which has reciprocal legislation limiting such export. The Colonies and territories so excepted are the Cape Colony, Natal, Basutoland, Swaziland, the Bechuana-

14. Nothing in sub-section (9) of section *forty-two* of the Municipal Corporations Ordinance 1903 contained shall be taken as empowering the council of a municipality to make regulations inconsistent with the provisions of this Ordinance or any regulations made thereunder but such sub-section shall so far as it relates to game be deemed to confer upon such council in relation to lands under its control such rights as are conferred by this Ordinance upon an owner occupier lessee or cultivator of land and power to make regulations for that purpose.

15. (1) The possession of the carcases, meat, skins, hides, horns or tusks of freshly killed game shall be prima facie evidence against a person accused of contravening this Ordinance or any regulation made thereunder that he has hunted such game.

(2) Any person charged with doing any act for which by this Ordinance a licence or permission is required, shall be deemed to be without such licence or permission unless he shall produce the same to the court or give other satisfactory proof of possessing the same.

(3) The burden of proving any fact which would be a defence to a charge of contravening this Ordinance or and any regulation made thereunder shall lie upon the person charged.

16. Any person contravening any provision of this Ordinance for the contravention of which no penalty is expressly provided shall be liable on conviction to a fine not exceeding five pounds and for any second or subsequent offence to a fine not exceeding twenty pounds.

17. Whenever any fine shall have been imposed under the provisions of this Ordinance or any regulations made thereunder and the person convicted shall not forthwith pay the same the court may order that such person be imprisoned with or without hard labour for a period

(*a*) not exceeding one month if the fine imposed does not exceed five pounds ;
(*b*) not exceeding two months if the fine imposed does not exceed ten pounds ;
(*c*) not exceeding four months if the fine imposed does not exceed twenty pounds ;
(*d*) not exceeding six months if the fine imposed does not exceed twenty-five pounds ;
(*e*) not exceeding nine months if the fine imposed does not exceed fifty pounds ;
(*f*) not exceeding twelve months if the fine imposed does not exceed one hundred pounds ;
(*g*) not exceeding eighteen months if the fine imposed be above one hundred pounds ;

unless such fine be sooner paid.

18. The court may order that any game or biltong or any skin, hide, horns, tusks, or carcase of game found in possession of any person convicted of a contravention of this Ordinance or any regulations made thereunder may be seized and forfeited and may cancel any licence or permit granted to any such person under this Ordinance.

19. All fines and the value of all forfeitures imposed for contravening this Ordinance or any regulation made thereunder shall be paid into the public revenues of

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and Protectorate, the Province of Mozambique, Southern Rhodesia, the Orange River Colony, and German South-West Africa [Procs. (Admn.) Nos. 99 of 1907, 10 of 1908, 20 of 1908, 76 of 1908, and 75 of 1909]. For text of Act see Appendix III.

the Colony ; provided that the court may order that a sum not exceeding one-half of any fine imposed be paid to any person by whose information a conviction shall have been obtained for such contravention aforesaid.

20. The court shall have special jurisdiction to impose the maximum penalties provided for a contravention of this Ordinance or regulations made thereunder ; provided that convictions and sentences imposed by such court shall be subject to review by and appeal to the Supreme Court in the same manner and under the same conditions as are convictions and sentences of courts of resident magistrate under the Magistrates Court Proclamation 1902, or any amendment thereof and the provisions of sections *thirty-nine* to *forty-three* inclusive of the said Proclamation as amended from time to time by any law shall apply in the case of any such review or appeal.

21. Notwithstanding anything in the Arms and Ammunition Ordinance 1902 contained it shall be lawful for any warden or ranger of a reserve established under section *three* of this Ordinance to be in possession of arms and ammunition while acting in the discharge of his duty under the Regulations made under this Ordinance without having a licence to possess such arms and ammunition.

22. This Ordinance may be cited for all purposes as the Game Preservation Ordinance 1905 and shall come into operation on a day to be hereafter fixed by Proclamation of the Lieutenant-Governor in the *Gazette*.

Passed in Council the Fourth day of September One thousand Nine hundred and Five.

SCHEDULE.

[As prescribed by Proclamation (Admn.) No. 15 of 1910.]

Part I.

English Common Nomenclature	Scientific Nomenclature	Dutch Common Nomenclature.
Guinea-fowl, common	*Numida coronata*	Tarentaal.
Guinea-fowl, crested	*Guttera edouardi*	Kuifkop tarentaal.
Pheasant, red-necked	*Pternistes swainsoni*	Bosveld faisant.
Pheasant, Cape or noisy Francolin	*Francolinus capensis*	Kaapse patrijs
Francolin, coqui or shrimpy	*Francolinus coqui*	Swempie
Francolin, crowned	*Francolinus sephoena*	Kroon-patrijs.
Francolin, Orange River	*Francolinus gariepensis*	Vrijstaat patrijs.
Francolin, Shelley's	*Francolinus shelleyi*	Shelley's patrijs.
Francolin, Natal	*Francolinus natalensis*	Natal patrijs.
Cape redwing	*Francolinus levaillanti*	Roodvleugel patrijs.
Cape partridge or greywing	*Francolinus afer*	Bergpatrijs.
Namaqua partridge or sandgrouse	*Pterocturus namaquus*	Namaqua-patrijs.
Sandgrouse, spotted	*Pterocles variegatus*	Gele zandpatrijs.
Sandgrouse, yellow-throated	*Pterocles gutturalis*	Nachtpatrijs.
Sandgrouse, double-banded	*Pterocles bicinctus*	Dubbel gebande zand-patrijs.
Bustard, bush	*Otis ruficrista*	Bos-knorhaan.
Bustard, Natal	*Otis barrovi*	Natal knorhaan.
Bustard, blue	*Otis caerulescens*	Blaauw knorhaan.
Bustard, Vaal	*Otis vigorsi*	Vaal knorhaan.
Bustard, white-quilled or cackling	*Otis afroides*	Witvleugel knorhaan.
Bustard, black-bellied or silent;	*Otis melanogaster*	Zwartpens knorhaan.

SCHEDULE—*continued.*

English Common Nomenclature.	Scientific Nomenclature.	Dutch Common Nomenclature.
Bustard, Ludwig's	*Otis ludvigi*	Pauw.
Bustard, Stanley	*Otis cafra*	Veldpauw.
Bustard, Kori	*Otis kori*	Gompauw.
Shoveller, Cape	*Spatula capensis*	Slop.
Pochard, South African	*Nyroca capensis*	Bruine eend.
Sheldrake, South African	*Casarca cana*	Bergeend.
Duck, white-masked	*Dendrocygna viduata*	Nonnetje eend.
Duck, knob-billed	*Sarcidiornis melanonotus*	Knobbeleend.
Duck, white-backed	*Thalassornis leuconotus*	Witrugeend.
Duck, Maccoa	*Erismatura maccoa*	Maccou eend.
Duck, black	*Anas sparsa*	Zwarte eend.
Teal, red-billed	*Anas erythrorhyncha*	Roodbekeend.
Teal, yellow-billed	*Anas undulata*	Geelbek.
Teal, Hottentot	*Anas punctata*	Gevlekte eend.
Teal, Cape	*Anas capensis*	Teeleendje-kaapse smee.
Goose, spur-winged	*Plectropterus gambensis*	Wilde makouw.
Goose, Egyptian	*Chenalopex aegyptiacus*	Wilde gans-Nylgans-berggans.
Goose African dwarf	*Nettopus auritus*	Dwerggans.
Hare, Cape	*Lepus capensis*	Vlakte-haas.
Hare, rock	*Lepus saxatilis*	Kolhaas.
Hare, red	*Lepus crassicaudatus*	Kliphaas.
Blesbuck	*Damaliscus albifrons*	Blesbok.
Bushbuck	*Tragelaphus sylvaticus*	Bosbok.
Duiker	*Cephalophus grimmi*	Duiker.
Duiker, red	*Cephalophus natalensis*	Umzumbi.
Grysbuck	*Rhaphicerus melanotis*	Grijsbok.
Klipspringer	*Oreotragus saltator*	Klipspringer.
Oribi	*Ourebia scoparia*	Oribi.
Pallah or rooibuck	*Aepyceros melampus*	Rooibok or impala.
Reedbuck	*Cervicapra arundinum*	Rietbok.
Rhebuck, rooi	*Cervicapra fulvorufula*	Rooi reebok.
Rhebuck, vaal	*Pelea capreola*	Vaal reebok.
Springbuck	*Antidorcas euchore*	Springbok.
Steenbuck	*Rhaphicerus campestris*	Steenbok.
Waterbuck	*Cobus ellipsiprymnus*	Waterbok.
Warthog	*Phacochoerus aethiopicus*	Vlakvark.

Part II.—Big Game.

English Common Nomenclature.	Scientific Nomenclature.	Dutch Common Nomenclature.
Crane, crested	*Chrysopelargus balearica*	Mahem.
Ostrich	*Struthio australis*	Vogelstruis.
Antelope, roan	*Hippotragus equinus*	Bastaard gemsbok of bastaard eland.
Antelope, sable	*Hippotragus niger*	Zwartwitpens.
Buffalo	*Buffelus caffer*	Buffel.
Eland	*Taurotragus oryx*	Eland.
Elephant	*Elephas africanus*	Olifant.
Gemsbok	*Oryx gazella*	Gemsbok.
Giraffe	*Giraffa capensis*	Kameel.
Hartebeest, red	*Bubalus Caama*	Hartebeest.
Hartebeest, Lichtenstein	*Bubalus lichtensteini*	Mof Hartebeest.

SCHEDULE—*continued.*

English Common Nomenclature.	Scientific Nomenclature.	Dutch Common Nomenclature.
Hippo	*Hippopotamus amphibius*	Zeekoe.
Kudu	*Strepsiceros kudu*	Koedoe.
Rhinoceros	*Rhinoceros bicornis*	Rhenoster.
Sassaby	*Damaliscus lunatus*	Bastaard hartebeest.
Wildebeest, blue	*Connochoetus taurinus*	Blauw wildebeest.
Wildebeest, black	*Connochoetus gnu*	Zwart wildebeest.
Zebra	*Equus burchelli*	Kwagga of zebra.

APPENDIX II.

(Government Notice No. 212 of 2nd March, 1910.)

REGULATIONS UNDER SECTION *four* OF THE GAME PRESERVATION ORDINANCE, 1905, (AS AMENDED BY ACT NO. 13 OF 1907, ACT NO. 30 OF 1907, AND ACT NO. 11 OF 1909).

In these regulations,

"the Ordinance" shall mean the Game Preservation Ordinance, 1905, as amended by the Game Preservation Amendment Act, 1907, the Ostriches Exportation Prohibition Act, 1907, and the Game Preservation Further Amendment Act, 1909;

the interpretation of terms given in section *two* of the Ordinance applies to these regulations;

"the Colonial Secretary" shall from the 31st day of May, 1910, mean the Administrator of the Transvaal acting under the provisions of the South Africa Act, 1909;

"the Minister of Lands" shall from the 31st day of May, 1910, mean a Minister of State for the Union appointed under the provisions of the South Africa Act, 1909;

"Assistant Colonial Secretary" shall from the 31st day of May, 1910, mean an officer assigned or appointed to the Province of the Transvaal whom the Administrator may charge with the duties required of the Assistant Colonial Secretary under these regulations.

1. No person shall capture or destroy game by means of nets, springes, gins, traps, snares, sticks, or poison, or have in his possession, or set, or use any net, springe, gin, trap, snare, or poison for the purpose of capturing or destroying game, except

(*a*) in the case of an owner, occupier, or cultivator of land destroying game thereon which is causing damage to trees, plants, or standing crops;

(*b*) in the case of a person capturing the young of wild ostriches on the authority of a permit issued under regulations 32 or 36.

2. No person shall course game with dogs on Crown land, whether a native location or not, unless he shall have first secured on payment of the prescribed fee a permit (Schedule A) from the Resident Magistrate of the district. Every such permit shall distinctly state the number and description of game which the holder is entitled to kill.

3. A Resident Magistrate may refuse any application for a permit to course game on Crown land without assigning any reason for such refusal.

4. Any person contravening the foregoing regulations or any condition of any permit issued under them shall be liable on conviction to a fine not exceeding £25.

5. No person shall remove, disturb, or destroy the nest of any game bird unless such nest be upon cultivated land or land which is being prepared for cultivation, and no person shall remove, disturb, or destroy any eggs or the young of any game bird or animal unless he shall have first secured a permit (Schedule B) from the Colonial Secretary. Every such permit shall distinctly state the number and description of such eggs, birds, or animals which the holder is entitled to destroy or take.

6. The Colonial Secretary shall not issue the permit provided for by the last preceding regulation unless he is satisfied that the eggs or the young of game to which the permit is to apply are required for the purposes of rearing or breeding, acclimatization, or scientific investigation.

7. No person shall sell any eggs or the young of any game bird or animal unless he shall have first secured a permit (Schedule C) from the Colonial Secretary.

8. No person shall purchase the eggs of any game bird or the young of any game bird or animal from any person who has not secured a permit to sell the same as prescribed by the last preceding regulation.

9. Any person contravening any provision of the foregoing regulations Nos. 5, 7, and 8, or any condition of any permit issued under them, shall be liable on conviction to a fine not exceeding £25.

10. No person shall export from the Colony game, dead or alive, whether dead game be fresh, dried, or in any way preserved, unless he shall have first secured a permit (Schedule D) from the Colonial Secretary.

11. The Colonial Secretary shall not issue a permit under the last preceding regulation unless he is satisfied that the game is not to be exported for purposes of trade or that the interests of science require that the permit shall be granted.

12. No person shall export from the Colony horns, tusks, skins, or hides of game not forming a bona fide portion of the personal apparel or luggage of a passenger unless he shall have first secured a permit (Schedule D) from the Colonial Secretary.

13. The permits provided for by regulations Nos. 10 and 12 hereof shall be surrendered at the time of export to the Customs officer or railway official who supervises the export of the consignment.

14. Animals or goods for which a permit to export has been secured under regulations Nos. 10 and 12 hereof shall not be exported at any point of the Transvaa border other than ports of entry.

15. Any person contravening any provision of the foregoing regulations Nos. 10, 12, 13, and 14 or any condition of any permit issued under them shall be liable on conviction to a fine not exceeding £50.

16. The animals named in Schedule F hereto are vermin for whose destruction rewards shall be paid (at the rates shown in the Schedule) by the Resident Magistrate of the district in which they are destroyed.

17. Vermin may be destroyed by shooting, coursing, by means of nets, springes gins, traps, snares, or by poison, provided that the use of poison for such purpose shall be subject to such conditions as the Resident Magistrate of the district may prescribe.

18. In proof of the destruction of vermin, the applicant for reward will be required to produce, in the case of jackal, the skin with the tail not severed ; and, in the case of a wild dog or baboon, the head ; he will also be required to make a written declaration in the form given in Schedule G.

19. The skins of vermin, for the destruction of which a reward has been paid, shall be the property of the Government, and shall, if in good condition, be marked by the official before whom they are produced, at the juncture of the tail and the skin of the body with a perforating stamp, or in such other way as the Colonial Secretary may from time to time prescribe. Skins so marked shall thereafter be sold by the Resident Magistrate by public auction or disposed of in such other way as he may consider best in the interests of the Government. The proceeds of such sale or disposal shall be paid into revenue.

Skins not in good condition and heads shall be forthwith destroyed.

20. Any person who secures or attempts to secure for himself or any other person a reward for the destruction of vermin by means of a false declaration, or by the production of skins or heads belonging to vermin for the destruction of which a reward has been already paid, shall be liable on conviction to a fine not exceeding £10 for every head of vermin for which he has secured or attempted to secure such reward.

21. The Colonial Secretary may appoint for the reserves established under sub-section (*e*) of section *three* of the Ordinance such wardens, rangers, and native police as he may consider necessary.

22. The Colonial Secretary may appoint for every game reserve the points and routes by which alone persons may enter or pass through a reserve. Such appointment shall be notified once in the *Gazette*, and once in a newspaper (if any) circulating in the district in which such reserve is situate.

23. No person shall enter or pass through a game reserve otherwise than at the points or by the routes appointed under the preceding regulation ; provided that owners of private land situate in a reserve or persons having the permission in writing of such owners shall have free access to every part of their land.

24. No person shall carry firearms within the limits of a game reserve without the permission of the warden or principal ranger of such reserve, and then only under the direction and control of such warden or ranger.

25. All persons within a game reserve shall conform to and obey all lawful orders and directions issued by the warden or rangers of such reserve.

26. No person travelling through a game reserve shall, without the permission of the warden or principal ranger of such reserve, camp within the limits of such reserve for a longer period than is necessary for resting his animals and himself ; provided that the right of owners of private land situated within the reserve and of persons having the permission in writing of such owners to camp upon their land, shall not be interfered with.

27. The warden or principal ranger of a game reserve may destroy any dog found at large and not under control within the limits of such reserve.

28. The warden or principal ranger of a game reserve may destroy any game within the reserve, the continued existence of which is in his opinion prejudicial, whether on account of disease or for any other reason, to the health or well-being of the rest of the game in the reserve ; provided that such warden or principal ranger shall forthwith in every case report the fact and circumstances to the Colonial Secretary in writing.

29. No person shall squat in a game reserve without the permission of the warden or principal ranger thereof unless he be duly authorized thereto by the owner of the land in that reserve.

30. No person not being a warden, ranger, or policeman appointed under regulation 21 hereof, shall destroy vermin within the limits of game reserve without the permission of the warden or principal ranger.

31. Any person contravening any provision of the foregoing regulations Nos. 23, 24, 25, 26, 29, and 30 shall on conviction be liable to a fine not exceeding £50.

32. No person shall upon Crown land capture the young or take the eggs of the wild ostrich unless he shall be in possession of a permit (Schedule H) from the Minister of Lands. Each permit shall distinctly state the number of young ostriches and eggs to be captured or taken, and no permit shall be of force for more than six months from the date of issue. No permit shall be transferable, but a permit-holder may employ any person other than a native or coloured person to capture on his behalf young ostriches to take the eggs of ostriches, provided the name of the person so employed shall first have been approved by the Minister of Lands in writing. The Minister may in his discretion cancel any permit before the expiration of the period of availability thereof. No permit-holder shall allow any native or coloured person to capture young ostriches or to take ostrich eggs on his behalf, unless such native or coloured person is under the direct supervision of the permit-holder or of any person in his employ and authorized in manner aforesaid.

33. Every person to whom a permit is issued under the preceding regulation shall, at the expiration of the period covered by the permit, notify to the Minister of Lands the number of chicks or eggs captured or taken by him. Such notification shall also show the number of chicks captured (*a*) for the use of the permit-holder on land of which he is the occupier and (*b*) for the purpose of sale or disposal for profit.

34. Any person contravening the provisions of regulation 32 or the conditions of any permit issued shall be liable to a fine not exceeding £25.

35. Any person who shall, except with the permission of the Minister of Lands first obtained, sell or otherwise dispose of for profit any egg taken under the authority of a permit issued under regulation 32, shall be liable on conviction to a fine not exceeding £25.

36. The owner or lessee of a private farm may obtain a permit (Schedule B) from the Colonial Secretary authorizing any person named by him to capture the young of wild ostriches or to take the eggs of such ostriches on his farm under conditions specified by the owner and approved by the Colonial Secretary. The conditions so specified and approved shall be stated in writing on the permit.

37. Any person who, upon private land, captures the young or takes the eggs of the wild ostrich without having a permit issued under the preceding regulation authorizing him to do so, or who having such a permit contravenes any condition thereon stated, shall be liable on conviction to a fine not exceeding £25.

38. No person shall export from the Transvaal the young or eggs of the wild or domesticated ostrich without a permit (Schedule D) from the Colonial Secretary. That permit shall not be granted except in the case of export to a Colony or Territory in South Africa named by the Governor in any Proclamation issued under section *two* of the Ostriches Exportation Prohibition Act (No. 30, 1907).

39. The Colonial Secretary may issue at any time to any Government officer, or to an authorized agent of a Government of any British Possession or foreign State, or of a recognized Museum or Scientific Society, a permit (Schedule I) to hunt game for scientific purposes on such conditions and subject to such restrictions as the Colonial Secretary may prescribe in writing on that permit; provided that no such permit may authorize any person other than an officer appointed under regulation 21 hereof to hunt game within a game reserve. The holder of a permit issued under this regulation shall not be required to take out a licence under section *seven* of the Ordinance to hunt the game which he may hunt on the conditions and subject to the restrictions prescribed by the Colonial Secretary under this regulation.

A permit issued under this regulation shall not be an authority to hunt game on land privately owned without the permission of the occupier of such land.

40. The fees to be paid for any licence or permit issued under the Ordinance or these regulations shall be those prescribed in Schedule J.

41. Upon issue of any game licence or of any big game licence, the holder shall sign his name in ink thereon, and if thereafter required by any police officer to produce his licence he shall, upon demand of such police officer, sign his name afresh in the presence of that officer. A game licence or a big game licence shall not be valid unless the signature of the person to whom it is issued is endorsed thereon.

Any person who refuses to sign his name on a licence produced by him to a police officer shall be guilty of a contravention of this regulation, and shall be liable on conviction to a fine not exceeding £25.

42. (i.) The form of a "game licence" issued under section *eight*, sub-section (*a*), of the Ordinance shall, in the case of a licence to shoot game for which a close season of seven months or more is provided by proclamation, be that prescribed in Schedule K; and in the case of a licence to shoot game for which a close season of seven months is *not* provided, that prescribed in Schedule L.

(ii.) The form of a "big game licence" issued under section *eight*, sub-section (*b*), of the Ordinance shall be that prescribed in Schedule M.

(iii.) The form of "sale licence" issued under section *eight*, sub-section (*c*), of the Ordinance shall be that prescribed in Schedule N.

(iv.) The form of permit issued under section *ten*, sub-section (*d*), of the Ordinance shall be that prescribed in Schedule O.

43. The owner or lessee of land may sell the meat of game lawfully killed on his land, but no other person shall sell game meat unless

(*a*) either he has purchased it from the owner or lessee of land within the Transvaal or it is the meat of game lawfully killed outside the Transvaal or imported from oversea; and

(*b*) he is a licensed butcher or market master appointed under law or municipal by-law; and

(*c*) he has obtained a "sale licence" as by the Ordinance and these regulations provided.

For the purpose of this regulation "game meat" shall mean the meat of any Transvaal game bird or game animal, whether in a fresh state or as biltong or in any other state.

44. (i.) No person shall purchase game or biltong from an owner or lessee of land within the Transvaal, except upon delivery to him by such owner or lessee of a certificate in writing signed by the owner or lessee that the game or the game

from which the biltong was made (as the case may be) was lawfully killed on the land leased or owned by the person signing that certificate.

(ii.) No person shall purchase game or biltong from any person other than the owner or lessee of land within the Transvaal, unless the vendor be a licensed butcher or market master who holds a current "sale licence" to deal in game as prescribed by the Ordinance and these regulations.

(iii.) Any person who wilfully makes a false statement in a certificate delivered under this regulation, or who falsely represents to any purchaser that he is lawfully entitled to sell game, shall be guilty of contravening these regulations.

45. Any police officer at all reasonable times may enter upon the premises of any licensed hotel, boarding-house, restaurant, or eating-house and may require the proprietor or the manager thereof to inform him where, how, and when any game or biltong found on the premises has been purchased or procured. Any such proprietor or manager who refuses to give full and accurate information or who wilfully gives false information shall be guilty of contravening these regulations.

46. In addition to the conditions stated in section *nine* of the Ordinance every holder of a sale licence shall observe the following conditions—

(*a*) he shall not sell game during the "close season" for that game, unless it has been lawfully killed or imported from oversea or from outside the Transvaal;

(*b*) he shall keep a true and accurate register recording full particulars of all game and biltong consigned to or received by him, and showing the quantity and description of game and biltong, and the names and addresses of the consignors or other persons from whom the game or biltong was obtained or purchased, and shall produce such register to any police officer upon demand;

(*c*) he shall observe particularly the provisions of regulations Nos. 43 (*a*) and 44 (1).

47. Any person contravening any provision of the foregoing regulations Nos. 43 and 47 inclusive, or any condition of a "sale licence," shall be liable on conviction to a fine not exceeding £50.

Schedule J.

Fees for Licences and Permits (Regulation No. 40).

A Game Licence (A) to shoot game for which a close season of seven months or more during any one year is provided by Proclamation:—

For the whole open season	£1 10 0
For one month of the open season	0 15 0

A Game Licence (B) to shoot game for which a close season of seven months or more during any one year is *not* provided [to be issued only during periods when the use of the Game Licence (A) is not admissible]:—

For each month	£0 5 0
A Big Game Licence (for the whole or any part of an open season) ..	25 0 0
A Permit to Course Buck on Crown lands (Regulation No. 2) for the whole or any part of an open season	3 0 0
A Sale Licence (game dealer's) for each calendar year	3 0 0

No fees are payable for permits under :—
Regulation No. 5, to take the eggs or young of game.
Regulation No. 7, to sell the eggs or young of game.
Regulation No. 10, to export game from the Transvaal.
Regulation No. 12, to export horns, hides, etc., from the Transvaal.
Regulation No. 32, to capture young ostriches and take ostrich eggs.
Regulation No. 39, to hunt game for scientific purposes.
Regulation No. 42 (iv.), to shoot springbuck or blesbuck during the close season on an enclosed farm.

APPENDIX III.

Act No. 30 *of* 1907.]

AN ACT TO AMEND THE LAW RELATING TO THE EXPORT FROM THIS COLONY OF OSTRICHES AND OSTRICH EGGS.

(*Assented to 20th August*, 1907.)

Be it enacted by the King's Most Excellent Majesty by and with the advice and consent of the Legislative Council and Legislative Assembly of the Transvaal as follows :—

1. Section *thirteen* of the Game Preservation Ordinance 1905 shall be and is hereby repealed together with so much of paragraph (*f*) of sub-section (1) of section *four* of the said Ordinance as refers to regulations prescribing the manner of payment of export duty on ostriches and ostrich eggs payable under the said section *thirteen*.

2. (1) On and after the date of the taking effect of this Act it shall not be lawful to export from this Colony save as is in this section provided any ostrich or ostrich egg.

(2) Nothing in this section contained shall apply to the export of any ostrich or ostrich egg from this Colony to any Colony or territory in South Africa in respect of which the Governor shall declare by Proclamation in the *Gazette* that there is a law in force in such Colony or territory prohibiting under penalties equal to the penalties hereinafter mentioned the exportation therefrom of ostriches or ostrich eggs except to a Colony or territory in South Africa which is in like manner exempted from the prohibition contained in such law.

3. Any person who shall contravene the provisions of this Act shall be guilty of an offence and shall be liable on conviction to imprisonment with or without hard labour for a period not less than one year and not exceeding two years.

4. Courts of resident magistrate shall have special jurisdiction to impose any penalty prescribed by this Act for a contravention thereof.

5. This Act may be cited for all purposes as the Ostriches Exportation Prohibition Act 1907 and shall take effect on such date as the Governor may by Proclamation in the *Gazette* declare.

APPENDIX IV.

FISH PRESERVATION ORDINANCE (No. 5 of 1906).

Be it enacted by the Lieutenant-Governor of the Transvaal with the advice and consent of the Legislative Council thereof as follows :—

1. The Fish Preservation Ordinance 1904 shall be and is hereby repealed.

2. The Lieutenant-Governor may from time to time by Proclamation in the *Gazette*

(*a*) prescribe fix and alter for any district or portion of a district of this Colony the periods of close season within which it shall not be lawful to fish for capture or destroy all or any particular fish;

(*b*) prescribe a list of fish being native fish which shall not be subject to any such periods of close season;

(*c*) prohibit for a specified period the fishing for capture or destruction in any river stream lake dam pool or other waters of any trout or of any other fish which have been or shall be introduced into this Colony.

3. Any person who shall at any time by means of dynamite or other explosive or by means of chemical poisonous or other injurious substance wilfully kill or destroy any fish in any river stream lake dam pool or other waters in this Colony shall be liable on conviction to a fine not exceeding fifty pounds and in default of payment of the same to imprisonment with or without hard labour for a period not exceeding six months or to both such fine and such imprisonment.

4. The Lieutenant-Governor may from time to time make alter and repeal regulations not inconsistent with the provisions of this Ordinance

(*a*) prohibiting the taking of all or any particular fish by means of any drag cast stake or other net without a licence;

(*b*) regulating the periods within which all fish or any particular fish may be taken under such licence by means of a drag cast stake or other net;

(*c*) prescribing who shall issue such licences and the fees payable therefor;

(*d*) prescribing the size of any such drag cast stake or other net and of its mesh and the manner and locality in which it shall be used;

and such regulations may be put in force in every or any particular district of this Colony or in any portion of a district.

5. Any person who shall fish for capture or destroy any trout in any of the rivers streams or other waters in this Colony except by means of rod and line or shall use with intent to such capture or destruction any bait or lure other than artificial fly shall be liable on conviction to a fine not exceeding twenty pounds and in default of payment of the same to imprisonment with or without hard labour for a period not exceeding three months.

6. Any person who

(*a*) shall act in contravention of any Proclamation issued under section *two*; or

(*b*) shall contravene any regulation made under section *four*;

shall be liable on conviction to a fine not exceeding twenty pounds and in default of payment of the same to imprisonment with or without hard labour for a period not exceeding three months.

7. Any person charged with contravening a regulation under this Ordinance requiring him to have a licence shall be deemed to be without such licence unless he shall produce the same to the court before which he is charged or give other satisfactory proof of possessing the same.

8. When any person shall be convicted of taking fish by means of a drag cast stake or net in contravention of any regulation made under this Ordinance the court before which such conviction shall take place may order any such drag cast stake or net to be forfeited or may cancel any licence issued under such regulations.

9. This Ordinance may be cited for all purposes as the Fish Preservation

Ordinance 1906 and shall come into operation on the First day of September 1906.

Passed in Council the Ninth day of July One thousand Nine hundred and Six.

APPENDIX V.

Regulations under the Fish Preservation Ordinance (No. 5 of 1906).

(*Government Notices No.* 869, 1906, *and No.* 222, 1907.)

1. No person shall take any fish by means of any drag, cast, stake, or other net unless he shall have first obtained a licence under regulation *three* hereof; provided that nothing in this regulation shall apply to the use of a small net known as a "landing net" for the bringing to land of a fish caught with a rod or line.

2. No person shall take any fish by means of any drag, cast, stake, or any other net under any licence issued in accordance with these regulations except during the period commencing the 15th day of January and ending the 15th day of September in each year, both days inclusive.

3. Licences to take any fish by means of any drag, cast, stake, or any other net shall be issued by the resident magistrate of the district in which such fish are to be taken.

4. For every such licence a fee of five shillings shall be paid.

5. Every such licence shall expire on the 15th day of September next succeeding the date of its issue.

6. No licence shall be issued under these regulations for any net the mesh of which is less than two inches, measured from knot to opposite knot, and no such net shall be used folded.

7. For the purpose of these regulations the words "resident magistrate" shall include an assistant resident magistrate and a resident justice of the peace, and the word "district," as well as magisterial district, shall mean any area under the jurisdiction of an assistant resident magistrate or resident justice of the peace.

No. 22 *of* 1904.]

GAME LAWS OF BECHUANALAND.

Proclamation by His Excellency the High Commissioner.

Whereas it is expedient to amend the Proclamation dated the 19th day of September, 1893, regulating the killing of certain game in the Bechuanaland Protectorate;

Now therefore under and by virtue of the powers in me vested I do hereby declare proclaim and make known as follows:—

1. The Proclamation of the High Commissioner dated the 19th of September 1893 shall be and is hereby repealed but no such repeal shall affect any proceedings pending or any penalty incurred or to be imposed under the said Proclamation at the date when this Proclamation shall take effect.

2. For the purposes of this Proclamation the following term shall have the meaning herein assigned to it viz.:—"Large game" shall mean the wild ostrich and the several animals following not being domesticated and commonly known

as hippopotamus rhinoceros buffalo zebra quagga and all animals of the antelope species except the rhebuck klipspringer duiker and stembuck.

3. The period from the first day of October to the last day of February in the succeeding year both days inclusive shall be a close season within which it shall be unlawful to kill catch capture pursue hunt or shoot at large game save as hereinafter provided.

4. No person shall at any time catch capture pursue hunt or shoot at any elephant giraffe or eland save as hereinafter provided; and every person contravening this section shall be liable upon conviction to a penalty not exceeding £150 and in default of payment to imprisonment with or without hard labour for any period not exceeding twelve months.

5. Subject to the provisions herein contained defining the close season and to other the provisions of this Proclamation it shall be lawful for the Resident Commissioner of the Bechuanaland Protectorate to issue licenses upon such conditions as he may deem expedient to any person authorising him to shoot "large game." Such licenses shall not be transferable and the following fees shall be chargeable therefor:—

For the full season or for any period exceeding three calendar months	£20
For three calendar months or for any period exceeding two calendar months	£12
For two calendar months or any period exceeding one calendar month	£8
For one calendar month or any period exceeding fourteen days ..	£4
For fourteen days or any lesser period	£2

6. Any person who shall save as hereinafter provided kill catch capture pursue hunt or shoot at any "large game" without having previously obtained a license or permit under the provisions of this Proclamation or after the expiration of the time for which such license or permit shall have been granted or contrary to the conditions of such license or permit or during the close season shall be liable to a penalty not exceeding £150 and in default of payment to imprisonment with or without hard labour for any period not exceeding twelve months.

7. It shall be lawful for the Resident Commissioner or for any Assistant Commissioner or Magistrate or Justice of the Peace within the limits of his jurisdiction or for any member of any police force lawfully established within the Bechuanaland Protectorate or for any other person duly authorised by the Resident Commissioner or by any Assistant Commissioner or Magistrate within the limits of his jurisdiction at any time to demand the production of his license or permit by any person engaged in the pursuit of large game or of any elephant giraffe or eland and any person failing or refusing to produce the same shall be liable upon conviction to a penalty not exceeding £50 or in default of payment to imprisonment with or without hard labour for any period not exceeding four months.

8. Any penalties imposed by this Proclamation may be sued for before any Assistant Commissioner or Magistrate having jurisdiction and all such penalties may be recovered by the seizure and sale of any property belonging to the person convicted and any portion of the penalties recovered not exceeding in any case one half may in the discretion of the Assistant Commissioner or Magistrate trying the case be paid to the person (not being in the service of the Bechuanaland

Protectorate Government) on whose information the conviction shall have been made.

9. Notwithstanding anything to the contrary in this Proclamation contained it shall be lawful for the High Commissioner in such manner as he may think fit to authorise the Resident Commissioner to issue permits without charge to kill any elephant giraffe or eland subject to such limitations as the High Commissioner may appoint and to at any time withdraw such authority from the Resident Commissioner.

10. Notwithstanding anything to the contrary in this Proclamation contained it shall be lawful for the Resident Commissioner to issue permits without charge for the killing of "large game" for any period not exceeding two days.

11. Notwithstanding anything to the contrary in this Proclamation contained it shall be lawful for the Resident Commissioner to issue permits without charge to any Officials of the Bechuanaland Protectorate Service and to any member of the Bechuanaland Protectorate Police authorising and allowing such officials or police to kill catch capture pursue hunt or shoot at "large game" subject to such limitations as the Resident Commissioner may in any such permit prescribe.

12. Notwithstanding anything to the contrary in this Proclamation contained it shall be lawful for the Resident Commissioner to issue permits without charge to persons travelling on journeys on ordinary roads to kill "large game" in reasonable quantities for food within a distance of not more than one mile from such road except in the close season.

13. Notwithstanding anything to the contrary in this Proclamation contained the Resident Commissioner may if he thinks that necessity demands it issue to officials of the Protectorate and members of the Bechuanaland Protectorate Police permits to kill "large game" during the close season when such officials and police are travelling on Government service in portions of the country where adequate food supplies cannot by any other reasonable means be obtained.

14. Nothing in this Proclamation contained shall apply to any member of a native tribe who shall with the permission of the Paramount Chief of such tribe kill "large game" elephants giraffes or elands within the territory lawfully hunted by such tribe save as hereinafter mentioned.

15. No person whether native or otherwise shall kill the hen bird of the ostrich or remove interfere with disturb or be in possession of the feathers or eggs of such birds without the permission of the Resident Commissioner. Any person contravening this section shall be liable to a fine in respect to each offence not exceeding £50 or in default of payment to imprisonment with or without hard labour for a period not exceeding four months.

16. This Proclamation shall be entitled "The Large Game Preservation Proclamation 1904" and shall take effect on the 1st day of October 1904.

GOD SAVE THE KING.

Given under my hand and seal at Johannesburg this twenty-first day of September one thousand nine hundred and four.

MILNER,
High Commissioner.

By command of His Excellency the High Commissioner.
C. H. RODWELL,
Imperial Secretary.

GAME LAWS OF NATAL AND ZULULAND.

ACT No. 8, 1906.

"To consolidate and amend the Laws relating to Game."

BE IT ENACTED by the King's Most Excellent Majesty, by and with the advice and consent of the Legislative Council and Legislative Assembly of Natal, as follows:—

1. The enactments mentioned in Schedule A of this Act are hereby repealed without prejudice to any licences or permits granted thereunder, or to any liability incurred, or the prosecution of any offence committed before the commencement of this Act.

2. In this Act—

"Game" means any of the animals or birds mentioned in Schedules B and C of this Act.

"Owner" includes a corporation, local board, trustee, and any person having charge of lands under statutory authority, or private trust or the like.

"Occupier" includes any person having shooting rights over any land under a written agreement.

"Native Trust lands" means lands belonging to the Natal Native Trust or held in any public trust for natives.

"The Minister" means the Minister whose department is charged with the administration of this Act.

The expression "kill or catch," or any like expression, includes intentionally disturbing, chasing, capturing, shooting, or shooting at, injuring or destroying in whatever manner or by whatever means, and also includes any attempt to do any of such things; and also includes aiding or being knowingly a party to any of such acts.

3. The close season under this Act begins on the sixteenth day of August, and continues to the thirtieth day of April, inclusively, in each year.

The Governor in Council may, however, by proclamation, vary the close season for any species of game mentioned in the proclamation.

4. No person shall at any time kill or catch any game by means of nets, springes, gins, traps, snares, pitfalls, or sticks, or have in his possession for the purposes of killing or catching any game, or set any such thing as aforesaid for such purposes.

This section shall not, however, apply to the destruction of the birds included under Schedule B by natives by means of sticks within a native location at any time out of the close season.

No person shall at any time kill or shoot at with a shot gun, that is to say a gun discharging more than a single bullet at a time, any kind of antelope or deer except rheebok, boschbok, bluebok, klipspringer, duiker, grysbok, inhlengane, and imbabala.

5. No person shall during the close season kill or catch any of the game mentioned in Schedule B of this act.

6. No person shall at any time kill or catch any of the game mentioned in Schedule C of this Act except under the authority of a permit signed by the Minister, who shall, subject to the special provisions of this Act, have full discretion to grant or refuse such permit.

Application for a permit shall be made to the Minister in writing.

Every license to kill game in a reserve, or to kill any of the game mentioned in Schedule D, shall bear stamps up to a value calculated according to the rates respectively shown in Section 8 and Schedule D so far as they may apply, and sufficient to cover all game for which the permit is granted, but in no case shall the stamps be of a less value than five pounds (£5). No refund will be made in the event of the holder of the permit being unsuccessful in killing or catching any of the game mentioned.

No such permit shall be granted for or be available at any time except from the first day of May to the fifteenth day of August inclusively.

No such permit shall include roan antelope, buffalo cow, or koodoo cow, more than one black rhinoceros, one hippopotamus, one buffalo bull, two waterbuck, one koodoo bull, two inyala, and two impala.

The permit may contain such special conditions as the Minister may think proper, or as may be required by the regulations.

The permit shall be personal and not transferable, and shall specify the description and number of each class of game to be killed or caught, the time during which it will be available and the place in which it is to be used. Not more than one permit shall be issued to any person during any one year.

The permit must be produced to the magistrate of the division in which it is to be used for endorsement by him, and it shall not be available for use until so endorsed.

Every person hunting under the authority of a permit shall be required to produce it whenever so required by a constable or other person having authority for the purpose of inspecting licenses.

7. No person shall at any time kill or catch any of the game mentioned in Schedule E, nor shall any such game be included in a permit.

The Governor in Council may, by proclamation, add to the list in Schedule E any game to which it may in his opinion be necessary to give special protection, and this Act shall apply to game so added as if it were included in Schedule E of this Act.

8. Reserves, within which it will not be allowed to kill or catch game at any time without a special permit granted by the Minister, for the varieties of game specified therein may from time to time be established by the Governor in Council by notice in the *Natal Government Gazette.*

Such notice may from time to time be varied or revoked by a like notice.

All reserves heretofore established in the Province of Zululand shall be deemed to be reserves established under this Act.

Every such special permit will be granted upon the same terms, and under the same conditions, and subject to the same limitations in regard to the game which may be included in the permit, as are hereinbefore provided with regard to permits to kill and catch the game mentioned in Schedule C.

Every such permit shall bear stamps to the value of ten pounds (£10) irrespective of, and in addition to any special sum appointed by Schedule D.

Any person found in a reserve in circumstances indicating that he was unlawfully in pursuit of any game, shall be guilty of a contravention of this Act, unless he shall satisfy the Court that he was not there for any such purpose.

9. Any permit under this Act shall be cancelled by the magistrate if it is found that the person to whom it was granted has made a fraudulent or illegal use of it,

or has killed or caught any game in excess of or other than that specified in the permit, or has broken any of its conditions, or if he refuses, or fails without just excuse, to produce it when so required by a person having authority for the purpose. The permit shall thereupon become void, and no refund will be made of the money paid for it.

10. It shall be lawful for any magistrate, notwithstanding the foregoing provisions of this Act, on the application of the owner or occupier of any land who shall satisfy him that hartebeest, boschbok (male and female), duiker, hares, partridges, or guinea fowl, are causing loss and damage by destroying trees, plants, or standing crops, to grant a special permit to the person applying to destroy in whatever manner he may please such hartebeest, boschbok (male and female), duiker, hares, partridges, or guinea fowl upon such land only, during a time to be specified in the permit, but not exceeding six months in duration and renewable from time to time upon further application of the owner or occupier.

11. The Minister shall have power to grant permission to residents of the Province of Zululand, to kill game during the close season, if it is proved to his satisfaction that the game is doing damage to crops, or in times of scarcity. Such permission may exclude any specified kinds of game, and shall in no case include elephants, white rhinoceros, eland, roan antelope, buffalo cow, koodoo cow, or springbok.

12. If any person shall kill or catch any game upon Crown lands, or Native Trust lands, or go upon any Crown lands or Native Trust lands, with intent to kill or catch any game, without having first obtained from the magistrate of the division a written permit for the purpose, or if he shall kill or catch any game otherwise than is authorised by such permit, he shall be guilty of a contravention of this Act.

The permit shall specify the game to be killed or caught, the locality in which the permit is to be used, and the time for which it is to be available.

The magistrate may revoke a permit, and from that time it shall cease to be of any authority.

Nothing in this section shall be deemed to dispense with the necessity of obtaining a permit from the Minister, in the cases hereinbefore mentioned.

13. If any person shall, with intent to kill or catch any game, trespass upon any land, other than Crown land, or Native Trust land, without the consent of the owner or occupier, he shall be guilty of a contravention of this Act.

14. Any person so going upon Crown land or Native Trust land, or trespassing upon private land as aforesaid, may be required, in the case of Crown land or Native Trust land, by the magistrate or by a constable, or game conservator, or any other person authorised by the regulations, and in the case of private land by the owner or occupier, or his agent or servant, to forthwith quit such land, and also to state his name and residence; and if he shall refuse or wilfully delay to quit the land, or to give his true name and residence when required to do so, he shall be guilty of a contravention of this Act.

15. Any person who shall during the close season possess, carry, sell, or offer for sale, any game, dead or alive, mentioned in Schedules B and C of this Act, or who shall at any time possess, carry, sell, or offer for sale, any game, dead or alive, for which the Minister's permit is required, shall be guilty of a contravention of this Act, unless he shall prove that the animal or bird was either killed or caught, or bought or received during the period in which such animal or bird could

be legally killed or caught, or that it has been lawfully killed or caught, in pursuance of a permit, as the case may be, or that it has been imported by sea.

Any person who shall be found in the possession of any of the game authorised in Schedule E, dead or alive, shall be guilty of a contravention of this Act, and shall be liable to the same punishments as are provided for killing or catching such game as aforesaid, unless he shall show that he became lawfully possessed thereof, and that there has been no infringement of this Act, in respect of the killing or catching of such game.

16. Any game, or the carcase thereof, or any skin, hide, horn, tusk, or other part of the carcase of any game, found in the possession of any person may be seized and forfeited to the Government without any adjudication of forfeiture being required, unless it is shown that it has been obtained without any infringement of this Act.

17. No person shall employ a native to hunt game. A person holding a permit or otherwise lawfully engaged in hunting game may, however, employ natives to assist him, but such native shall not use firearms.

18. The Governor in Council may from time to time make regulations for any of the purposes of this Act.

The contravention of any such regulation shall be punishable by a fine not exceeding five pounds (£5).

19. Any person guilty of a contravention of this Act for which no special punishment is appointed shall be liable to a fine not exceeding ten pounds (£10), and in default of payment to imprisonment, with or without hard labour, for any term not exceeding three months.

In cases where the contravention is in respect of game included in Schedule D, or killing or catching game in a reserve without the necessary permit, the person shall, in addition to any penalty which may be imposed, be adjudged to forthwith pay to the magistrate the amount of any licence or permit, which in terms of this Act should have been first obtained.

20. Any person who shall kill or catch any of the game mentioned in Schedule E, or who, without having the proper permit by the Minister, duly endorsed by a magistrate, shall kill or catch any hippopotamus or black rhinoceros, shall be liable to a fine not exceeding one hundred pounds (£100), and in default of payment to imprisonment, with or without hard labour, for any term not exceeding six months.

21. In any prosecution under this Act, it shall be lawful for the Court, upon a second or later conviction, or if the Court is of opinion that, having regard to the circumstances of the case, a fine would be an inadequate punishment, to impose such sentence of imprisonment as is appointed for the offence without giving the option of a fine.

22. All contraventions of this Act or of the regulations may be prosecuted by any person in the Court of a magistrate.

All fines shall be paid to the Colonial Revenue, provided that the magistrate may award a sum not exceeding one-half of such fine to an informer by whose information the conviction has been obtained.

23. The Governor in Council may from time to time, by proclamation, remove any specified game from the lists contained in Schedules B or C of this Act, as regards the Province of Zululand, and may transfer such game to the list in another Schedule, for the purposes of the said Province.

Such proclamation may from time to time be varied or revoked by a like proclamation.

Subject to the powers of alteration given as aforesaid, the following game shall, as regards the Province of Zululand, be excluded from the Schedule C and included in Schedule B of this Act:

The imbabala or female boschbok, the rooi rheebok, the male rietbok, the steenbok, the inkumbi or red boschbok, the paauw, korhan, and crane.

SCHEDULE A.

Law No. 16, 1891, entituled Law "To make provision for the better preservation of game within the Colony of Natal."

Act No. 24, 1894, entituled Act "To amend the Game Law, 1891."

Act No. 4, 1904, entituled Act "To amend the Laws relating to game."

Zululand Proclamation No. 2, 1897, made by the Governor of Zululand on the 22nd day of April, 1897.

SCHEDULE B.

All varieties of the birds undermentioned, and known in this Colony as the partridge, pheasant, dikkop, wild guinea fowl.

Hares and all varieties of the antelope genus, generally known in this Colony as the rheebok, boschbok, bluebok, klipspringer, duiker, grysbok, inhlengane; also the zebra and blue wildbeest.

SCHEDULE C.

The hippopotamus, commonly called seacow, steenbok, hartebeest, eland koodoo, rietbok, impala, inyala, blesbok, ouribi, rooi rheebok, female boschbok commonly known as imbabala, red boschbok, commonly known as inkumbi, buffalo, waterbuck, rhinoceros, Java or Mauritius deer, paauw, korhan, crane, and ostrich.

SCHEDULE D.

Stamp duties upon permits to shoot game:

For each Hippopotamus	£20
For each Black Rhinoceros	£20
For each Buffalo Bull	£10
For each Koodoo Bull	£10
For each Eland Bull	£5

SCHEDULE E.

Elephant.
White Rhinoceros.
Eland Cow.
Roan Antelope.
Springbok.
Buffalo Cow.
Koodoo Cow.

Given at Government House, Pietermaritzburg, Natal, this Twenty-Ninth day of June, 1906.

By command of His Excellency the Governor.

CHARLES J. SMYTHE,
Colonial Secretary.

Act to amend the Game Act No. 8, 1906.

Be it enacted by the King's Most Excellent Majesty, by and with the advice and consent of the Legislative Council and Legislative Assembly of Natal, as follows:—

1. A Magistrate shall upon application by any landowner in his division grant him a permit for the destruction of hares upon his land during the close season of any year.

2. The Klipspringer shall be transferred from Schedule B to Schedule C of the Game Act No. 8, 1906.

Given at Pietermaritzburg, Natal, this Fourteenth day of February, 1910.

By command of His Excellency the Governor,

THOS. F. CARTER,

For Colonial Secretary.

GOVERNMENT NOTICE No. 244, 1907.

The subjoined regulations made under the provisions of Section 18 of Act No. 8, 1906, have been approved by His Excellency the Governor in Council, and are published for general information.

C. BIRD,

Principal Under Secretary.

COLONIAL SECRETARY'S OFFICE, NATAL,
24th April, 1907.

REGULATIONS UNDER SECTION 18 OF ACT NO. 8 OF 1906.

(1) In these Regulations the words or expressions "The Minister," "game," "owner," "occupier," "Native Trust lands," and "kill or catch," shall have the meanings assigned to them in the Act.

"The Act" means the Game Act No. 8 of 1906, "Crown forest" means a forest established under the provisions of any regulations made by virtue of Ordinance No. 4, 1853, or of any Law or Act amending the same.

(2) The Colonial Secretary's Department shall be charged with the administration of the Game Act, 1906.

(3) No person shall enter or leave a game reserve or demarcated Crown forest otherwise than at the points or by the routes pointed out to him by some person in authority, and no game permit shall be made use of in a game reserve or demarcated Crown forest before it has been exhibited to the officer in charge, owner, or occupier, as the case may be.

(4) It shall be lawful for any officer in charge of a demarcated Crown forest or game reserve, or for the owner or occupier, to destroy any dog found at large and not under control within the limits of such Crown forest or game reserve, and the owner of such dog shall have no claim to compensation for the destruction of the dog.

(5) Applications for permits to kill or catch game in a Crown forest, in a native reserve, or on Native Trust lands, shall be referred to the Minister in charge of the Forestry Department, or to the Minister in charge of the Native Affairs Department, as the case may be, for his recommendations thereon.

(6) The requisite stamp duty shall be forwarded with the application for a permit to kill or catch game in a reserve, or any of the game mentioned in Schedule D of the Act. If the application be refused, the stamp duty will be returned to the applicant.

(7) Game permits shall be in the form of the schedule hereto, and they shall have endorsed on them the following sections of the Act, namely: 4, 6 (last paragraph), 7 (first paragraph), 9, 13, 17, 20, and Schedule E.

A register of permits issued shall be kept.

(8) As soon as a person has availed himself of a game permit, it shall be returned to the Colonial Secretary, through the magistrate of the division, with an endorsement by the holder thereof showing the number and variety of game killed.

All permits of which no use has been made shall be returned in the same way not later than the 30th day of August in the year in which they were issued.

(9) No person who has abused the authority granted to him to kill or catch game, or who has been convicted of a contravention of the Act, or the regulations made thereunder, will be granted a permit to kill or catch game within the next three game seasons following such abuse or conviction.

(10) A failure without just excuse or a refusal to produce a game permit when required by any person authorised thereto, shall be immediately reported to the magistrate of the division, who shall thereupon forthwith act in terms of section 9 of the Game Act.

(11) Applications for permits to kill or catch any of the game mentioned in Schedules C and D of the Act, addressed to the Colonial Secretary, shall be forwarded through the magistrate of the division in which it is sought to kill or catch the game. Applications not so received will be referred for report to the magistrate of the division for which such permits are desired.

(12) Applications for permits to kill or catch game on private lands from others than the owners or occupiers thereof will not be considered unless they are accompanied by the permission in writing of such owners or occupiers to the applicant, to kill or capture, subject to the Colonial Secretary's permit, the variety and the number of game mentioned therein.

(13) If application be made for a permit to kill or catch game, on the ground that such game is doing damage to, or destroying crops on cultivated land, the magistrate shall verify the statement, if possible, by causing enquiries to be made in the matter.

(14) All applications shall specify the kind of game, and the number of each variety, it is sought to kill or catch, as well as the farm or particular locality within a magisterial division over which it is intended to shoot or hunt.

(15) No applications for permits received after the 31st day of July in any year shall be entertained, except as provided in Sections 10 and 11 of the Act.

(16) The magistrate shall report on all applications (except those under Section 10 of the Act) for permits received by him, or referred to him by the Colonial Secretary, and in his report he shall set forth:—

(a) Whether the applicant is, to the best of his belief and knowledge, a fit and proper person to hold a permit;

(b) The distribution and number, so far as may be known, in the locality, as well as in the division, of each variety of game mentioned in the application;

and, generally, he shall give such information bearing on the application as may be available or within his knowledge, so as to assist the Minister in determining the advisability or otherwise of granting the application.

MATTHEW NATHAN,
Governor.

No. 83, 1909.

PROCLAMATION

By His Excellency Lieutenant Colonel Sir Matthew Nathan, Royal Engineers, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief in and over the Colony of Natal, Vice-Admiral of the same, and Supreme Chief over the Native Population.

UNDER and by virtue of the powers in me vested by Section 23 of Act No. 8 of 1906, entituled Act "To consolidate and amend the Laws relating to Game," I, the Governor in Council, do hereby proclaim and make known that the Inhlengane buck shall be and the same is hereby removed from Schedule B and transferred to Schedule C of the said Act as regards the Province of Zululand.

GOD SAVE THE KING!

Given under my hand, and the Public Seal of the Colony, at Pietermaritzburg, Natal, this 21st day of December, one thousand nine hundred and nine.

C. O'GRADY GUBBINS,
Colonial Secretary.

SUMMARY OF THE GAME LAWS OF NORTH-WESTERN RHODESIA.

(PROCLAMATION NO. 1 OF 1905 AS AMENDED BY PROCLAMATION NO. 16 OF 1906. SEE ALSO HIGH COMMISSIONER'S NOTICE NO. 77 OF 1906.)

Licences to hunt game are not transferable, are annual (from the 1st January to 31st December of each year), and must be produced on demand by any official of the administration of North-Western Rhodesia.

They are of three kinds:—

1. ORDINARY LICENCE, costing for a person whether resident in the territory or not £1, and enabling him to hunt game mentioned in Schedule No. 1.

2. SPECIAL LICENCE, costing for a person resident in the territory £5, for any other person £25, and enabling him to hunt game mentioned in Schedules 1 and 2. In connection with this licence the attention of the holder is directed to "Special Licence—Special Conditions," as quoted below.

3. AN ADMINISTRATOR'S LICENCE, costing £50, and enabling the holder to hunt game mentioned in Schedules 1, 2 and 3. In the case of all licences particular attention must be paid to the Special Conditions, if any, endorsed thereon.

NOTE.—The term "hunt" includes taking, killing, pursuing, shooting at and wilfully molesting.

SCHEDULE NO. 1.

Bustard (including Korhaan and Paauw).
Francolin (including Pheasant and Partridge).
Dik-kop.
Guinea Fowl.
Sand Grouse (Namaqua Partridge).

And all such of the antelope species as are not contained in Schedules 2 and 3.

SCHEDULE No. 2.

Haartebeeste (Rooi and Liechenstein).	Sable Antelope.
Roan Antelope.	Tsesebe.
Wildebeeste (Gnu).	Sitatunga.
Hippopotamus.	Burchell Zebra.
Lechwe.	Bushbuck.
Klipspringer.	Waterbuck.
Impala.	Gemsbok.
Pookoo.	Buffalo.

SCHEDULE No. 3.

Elephant.	Koodoo.
Rhinoceros.	Mountain Zebra.
Giraffe.	West African or White-backed Duiker.
Eland.	Ostrich.

"SPECIAL LICENCE."

SPECIAL CONDITIONS.

(A) The holder of a special licence may under such licence hunt and kill not more sable antelope than five bulls and two cows and not more zebra than three (See H.C.'s Notice No. 77 of 1906).

(B) The holder of a special licence may under such licence hunt and kill the following animals mentioned in Schedule 3 of the High Commissioner's Proclamation No. 1 of 1905, that is to say, three eland bulls and one koodoo bull (see H.C.'s Proclamation No. 16 of 1906).

EXPORT. The holder of a special licence, or Administrator's licence, may export free of export duty not more than three heads of each variety of game he is authorised to hunt under his licence.

4. When game heads are exported for purely scientific purposes for the benefit of public institutions, the administrator may exempt them from export duty.

The ports of exit for the territory are at present:—

1. Livingstone, Sejebe's Drift (Walker's Drift), Kasungula Drift, Sesheke Drift and Feira. (To export or to attempt to export game heads by any other route is prohibited under penalties.)

2. EXPORT DUTIES. (1) 10s. per head for the game mentioned in Schedule 2. (2) 20s. per head for the game mentioned in Schedule 3.

LICENCES are issued in the territory by the following officials:—

His Honour the Administrator (Administrator's licence).
Inspector of Licences, Kalomo.
Civil Commissioner at Livingstone.

Also the officials in charge of the following districts:—

Barotse, Kasempa, Kafue, Lealui, Loangwa, Namwala, N'dola, Sesheke and Mwinilungu.

GAME RESERVES.

1. No shooting is allowed in the district known as Diowa, lying north-west of Lealui on the right (west) bank of the Zambezi River and south of the lower Lungwe-Bungu River.

2. Lechwe, Sitatunga and Pookoo Antelope on the lower reaches of the Luena River.

3. Lechwe and Pookoo Antelope in the Barotse Valley proper.

General Notes.

The restrictions as to sable and zebra mentioned in paragraph (A) of the foregoing "Special Conditions" are extended to holders of Administrator's licences; so too is the concession as to the export of game heads.

The term "game heads" does not include the tusks of elephant.

A game licence does not cover the sale of game. For this purpose a separate licence must be obtained. It is an annual licence costing £10, and is obtainable from any official charged with the issuing of ordinary and special game licences. No close time or fence season has yet been prescribed, but the eggs and the young of any game must not be removed, disturbed or destroyed without the special permission of the Administrator, which may be granted for scientific or other special purposes, and the terms of any such permission must be strictly observed. The sale of eggs and of the young of any game is strictly prohibited.

Females when accompanying their young are similarly protected. The young of the elephant is defined as being a young elephant with tusks under twenty pounds weight the pair.

The use of pitfalls, snares and traps for the capture of game, and the use of explosives or of poison for the taking of fish are forbidden under penalties.

A licence holder may employ natives to assist him *while he is actually engaged in hunting*, but shall not furnish them with or permit them to use firearms. The employment of natives to hunt game at any other time or by anyone other than a licence holder is illegal.

The possession of a game licence does not entitle the holder to enter upon land privately owned or occupied, save in pursuit of game wounded outside the boundaries thereof. Wilful trespass is both a punishable offence and the ground of a civil action for the value of the game taken killed or injured.

Magistrates and justices of the peace, having reason to suspect a contravention of the game law, possess powers of search and of issuing search warrants for game, and of declaring a forfeiture of any game or portions thereof seized thereunder, unless satisfied that such game was lawfully obtained.

In case of conviction of any offence against the game laws any *live animals or game and any heads, tusks, horns, skins, etc., of any animals or game found in the possession of the person convicted shall be liable to forfeiture.

The foregoing summary contains most of the information that may be found useful by sportsmen and others, but does not profess to be a full statement of the law on the subject. For this reference must be made to the Proclamations and Notice cited.

In applying for a game licence the applicant should state, if possible, what game he wishes to hunt, and where, and enquire as to alterations in the Game Schedules.

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* *The words "live animals or game" are equivalent to "any game whether dead or alive."*

GAME LAWS OF BRITISH NYASALAND.

BRITISH CENTRAL AFRICA PROTECTORATE.

NOTICE.

The following regulations, made by His Majesty's Commissioner and Consul-General, and allowed by the Secretary of State, are published for general information.

(Signed) ALFRED SHARPE,
His Majesty's Commissioner and Consul-General.

ZOMBA, 31st January, 1902.

KING'S REGULATIONS UNDER ARTICLE 99 OF "THE AFRICA ORDER IN COUNCIL 1889."

NO. 1 OF 1902.

1. In these Regulations—

"Hunt, kill, or capture" means hunting, killing, or capturing by any method, and includes every attempt to kill or capture; "hunting" includes molesting.

"Game" means any animal mentioned in any of the schedules.

"Person" means an individual of any nationality whatsoever.

"Native" means any native of Africa, not being of European or American race or parentage.

"Schedule" and "schedules" refer to the schedules annexed to these Regulations.

2. No person, unless he is authorized by a special licence in that behalf, shall hunt, kill or capture any of the animals mentioned in the First Schedule.

3. No person, unless he is authorized by a special licence under these Regulations, shall hunt, kill, or capture any animal of the kind mentioned in the Second Schedule if the animal be (*a*) immature, or (*b*) a female accompanied by its young.

4. No person, unless he is authorized under these regulations, shall hunt, kill, or capture any animal mentioned in the Third, Fourth, or Fifth Schedules.

5. The Commissioner may, if he thinks fit, by Proclamation, declare that the name of any species, variety, or sex of animal, whether beast or bird, not mentioned in any schedule hereto, shall be added to a particular schedule, or that the name of any species or variety of animal mentioned or included in one schedule shall be transferred to another schedule, and if he thinks fit, apply such declaration to the whole of the Protectorate, or restrict it to any district or districts in which he thinks it expedient that the animal should be protected.

6. No person shall within the Protectorate sell, or purchase, or offer or expose for sale, any heads, horns, skin, feathers, or flesh of any animal mentioned in any of the schedules, unless the animal has been kept in a domesticated state, and no person shall knowingly store, pack, convey, or export any part of any animal which he has reason to believe has been killed or captured in contravention of these Regulations.

7. If any person is found to be in possession of any elephant's tusk weighing less than 11 lb., or any ivory being, in the opinion of the Court part of an elephant's

tusk which would have weighed less than 11 lbs., he shall be guilty of an offence against these regulations, and the tusk or ivory shall be forfeited unless he proves that the tusk or ivory was not obtained in breach of these Regulations.

8. No person shall use any poison, or, without a special licence, any dynamite or other explosive for the killing or taking of any fish.

9. Where it appears to the Commissioner that any method used for killing or capturing animals or fish is unduly destructive, he may, by Proclamation, prohibit such method or prescribe the conditions under which any method may be used; and if any person uses any method so prohibited, or uses any method otherwise than according to the conditions so prescribed, he shall be liable to the same penalties as for a breach of these Regulations.

10. Save as provided by these Regulations, or by any Proclamation under these Regulations, any person may hunt, kill, or capture any animal not mentioned in any of the schedules, or any fish.

11. The areas described in the Eighth Schedule hereto are hereby declared to be the game reserves.

The Commissioner, with the approval of the Secretary of State, may by Proclamation declare any other portion of the Protectorate to be a game reserve, and may define or alter the limits of any game reserve, and these Regulations shall apply to every such game reserve.

Save as provided in these Regulations or by any such Proclamation, any person who, unless he is authorized by a special licence, hunts, kills, or captures any animal whatever in a game reserve, or, is found within a game reserve under circumstances showing that he was unlawfully in pursuit of any animal, shall be guilty of a breach of these Regulations.

12. The following licences may be granted by the Commissioner or such person or persons as may be authorized by the Commissioner, that is to say:—

(1). A "licence 'A.'"

(2). A "licence 'B.'"

(3). A "licence 'C.'"

The following fees shall be payable for licences, that is to say, for "licence 'A,'" 25*l.*, for "licence 'B,'" 4*l.*, or for "licence 'C,'" 2*l.*

Every licence shall expire on the 31st of March, and no licence shall remain in force for more than twelve calendar months.

Every licence shall bear in full the name of the person to whom it is granted, the date of issue, the period of its duration, and the signature of the Commissioner, or other person authorized to grant licences.

The applicant for a licence may be required to give security by bond or deposit, not exceeding 100*l.*, for his compliance with these Regulations, and with the additional condition (if any) contained in his licence.

A licence is not transferable.

Every licence must be produced when called for by any officer of the Protectorate Government.

In granting licences under these Regulations, a person authorized to grant licences shall observe any general or particular instructions of the Commissioner.

13. Licence "A" authorizes the holder to hunt, kill or capture animals of any of the species mentioned in the Third, Fourth, and Fifth Schedules, but unless the licence otherwise provides, not more than the number of each species fixed by the second column of schedules.

14. Licence "B" authorizes the holder to hunt, kill or capture animals of the species and to the number mentioned in the Fourth and Fifth Schedules only.

15. Licence "C" authorizes the holder to hunt, kill or capture animals of the species and to the number mentioned in the Fifth Schedule only.

16. The holder of a licence "A" "B" or "C" granted under these regulations may by the licence be authorized to kill or capture additional animals of any such species on payment of such additional fees as may be prescribed by the Commissioner.

17. Where it appears proper to the Commissioner for scientific, administrative, or other reasons, he may grant a special licence to any person to kill or capture, animals of any one or more species mentioned in any of the schedules, or to kill, hunt, or capture, in a game reserve, specified beasts or birds of prey, or other animals whose presence is detrimental to the purposes of the game reserve, or, in particular cases, to kill or capture, as the case may be, in a game reserve, an animal or animals of any one or more species mentioned in the schedules.

A special licence shall be subject to such conditions as to fees and security (if any), number, sex and age of specimens, district and season for hunting, and other matters as the Commissioner may prescribe.

Save as aforesaid, the holder of a special licence shall be subject to the general provisions of these regulations, and to the provisions relating to holders of licences.

18. Every licence-holder shall keep a register of the animals killed or captured by him in the form specified in the Seventh Schedule.

The register shall be submitted as often as convenient, but not less frequently than once in six months, to the nearest collector, who shall countersign the entries up to date.

Any person authorized to grant licences may at any time call upon any licence-holder to produce his register for inspection.

If any holder of a licence fails to keep his register truly, he shall be guilty of an offence against these Regulations.

19. The Commissioner may revoke any licence when he is satisfied that the holder has been guilty of a breach of these Regulations or of his licence, or has connived with any other person in any such breach, or that in any matters in relation hereto, he has acted otherwise than in good faith.

20. The Commissioner may, at his discretion, direct that a licence under these Regulations shall be refused to any applicant.

21. Any person whose licence has been lost or destroyed may obtain a fresh licence for the remainder of his term on payment of a fee not exceeding one-fifth of the fee paid for the licence so lost or destroyed.

22. No licence granted under these Regulations shall entitle the holder to hunt, kill, or capture any animals, or to trespass upon private property without the consent of the owner or occupier.

23. Any person who, after having killed or captured animals to the number and of the species authorized by his licence, proceeds to hunt, kill, or capture any animals which he is not authorized to kill or capture, shall be guilty of a breach of these Regulations, and punishable accordingly.

24. No person shall employ a native to hunt, kill, or capture any game. A licence-holder, however, when hunting animals may employ natives to assist him, but such natives shall not use fire-arms.

25. The Commissioner or any person authorized by him in that behalf may, at his discretion, require any person importing fire-arms or ammunition that may be used by such person for the purpose of killing game or other animals to take out a licence under these Regulations, and may refuse to allow the fire-arms or ammunition to be taken from the public warehouse until such licence is taken out.

26. When the members of any native tribe or the native inhabitants of any village appear to be dependent on the flesh of wild animals for their subsistence the collector of the district may, with the approval of the Commissioner, by order addressed to the chief of the tribe or headman of the village, authorize the tribesmen or inhabitants, as the case may be, to kill animals within such area, and subject to such conditions as to mode of hunting, number, species, and sex of animals and otherwise, as may be prescribed by the order.

An order under this Regulation shall not authorize the killing of any animal not mentioned in the First Schedule.

The provisions of these Regulations with respect to holders of licences shall not apply to a member of a tribe or native inhabitant of a village to which an order under this Regulation applies.

Save as aforesaid, the general provisions of these Regulations shall apply to every native who is authorized under this Regulation, and a breach of any order shall be a breach of these Regulations.

27. The collector of a district may, with the approval of the Commissioner, grant a licence, similar to licence "A" or licence "B" to any native, upon such terms as to fees and other conditions as the Commissioner may direct.

28. Where any public officer of the British Central Africa Protectorate thinks it expedient, for the purposes of verifying the register of a licence-holder, or suspects that any person has been guilty of a breach of these Regulations, he may inspect and search, or authorize any subordinate officer to inspect and search, any baggage, packages, waggons, tents, building, or caravan belonging to or under the control of such person or his agent, and if the officer finds any heads, tusks, skins or other remains of animals appearing to have been killed, or any live animals appearing to have been captured in contravention of these Regulations, he shall seize and take the same before a magistrate, to be dealt with according to law.

29. Any person who hunts, kills, or captures any animals in contravention of these Regulations, or otherwise commits any breach of these Regulations, shall, on conviction, be liable to a fine which may extend to fifty pounds, and where the offence relates to more animals than two, to a fine in respect of each animal which may extend to twenty-five pounds, and in either case to imprisonment which may extend to two months, with or without a fine.

In all cases of conviction, any heads, horns, tusks, skins, or other remains of animals found in the possession of the offender or his agent, and all live animals captured in contravention of these Regulations, shall be liable to forfeiture.

If the person convicted is the holder of a licence, his licence may be revoked by the Court.

30. Where in any proceeding under these Regulations any fine is imposed, the Court may award any sum or sums not exceeding half the total fine to an informer or informers.

31. All previous Regulations as to the hunting, killing, or capturing of game in the Protectorate are hereby repealed.

32. The forms of licences appearing in the Schedule hereto, with such modifica-ons as circumstances require, may be used.

33. These Regulations may be cited as "British Central Africa Game Regula-ons, 1902." They shall come into operation on the 1st April, 1902, but any cence may be previously granted, appointed to come into force on that day.

(Signed) ALFRED SHARPE,
His Majesty's Commissioner and Consul-General.

ZOMBA, 31st January, 1902.

LLOWED—
(Signed) LANSDOWNE,
His Majesty's Principal Secretary of State for Foreign Affairs.

SCHEDULES.

(These Schedules may contain the names of some species or varieties not ound, or only occasionally found, in British Central Africa.)

FIRST SCHEDULE.

nimals not to be hunted, killed, or captured by any person, except under special licence.

1. Giraffe.
2. Mountain zebra.
3. Wild ass.
4. White-tailed gnu (*Connochætes gnu*).
5. Eland (*Taurotragus*).
6. Buffalo.
7. Elephant (female or young).
8. Vulture (any species).
9. Secretary bird.
10. Owl (any species).
11. Rhinoceros-bird or beef-eater (*Buphaga*), any species.

SECOND SCHEDULE.

nimals, the females of which are not to be hunted, killed, or captured when accompanied by their young, and the young of which are not to be captured, except under special licence.

1. Rhinoceros.
2. Hippopotamus.
3. Zebra (other than the mountain zebra).
4. Chevrotain (*Dorcatherium*).
5. All antelopes or gazelles not mentioned in the First Schedule.

THIRD SCHEDULE.

Animals, limited numbers of which may be hunted, killed, or captured under Licenc "A" only.

Kind.	Number allowed.
1. Elephant (male)	2
2. Rhinoceros	2
3. Wildebeest gnu (except white-tailed species)	6

FOURTH SCHEDULE.

Animals, limited numbers of which may be hunted, killed, or captured under Licenc "A" and "B."

Kind.	Number allowed.	
1. Hippopotamus	6	
2. Zebras (other than the mountain zebra)	2	
3. Antelopes and gazelles— Class A—		
Hippotragus (sable or roan)	6	
Strepsiceros (kudu)	6	
4. Colobi and other fur-monkeys	6	
5. Aard-Varks (*Orycteropus*)	2	
6. Serval	2	
7. Cheetah (*Cynœlurus*)	2	
8. Aard-Wolf (*Proteles*)	2	
9. Smaller monkeys of each species	2	
10. Marabous	6	
11. Egret	2	
12. Antelopes and gazelles— Class B—		
Any species other than those in Class A	15	
13. Chevrotains (*Dorcatherium*)	10	
14. Wild pig of each species	10	
15. Smaller cats	10	
16. Jackal of each species	10	
17. Puku (*Kobus vardoni*)	2	Added to Schedule by Proclamation of 31st of October, 190
18. Lechwe waterbuck (*Kobus lechwe*)	2	
19. Myala (*Tragelaphus angasi*)	2	

No. 110 of 1910.

NYASALAND PROTECTORATE.

THE GAME REGULATIONS, 1902.

NOTICE.

It is hereby notified for general information that in pursuance of the power in him vested by section 12 of the Game Regulations, 1902, His Excellency th Acting Governor doth order that any person not resident in the Protectorat

hall, as in the aforesaid section provided, before obtaining a game licence make deposit or give bond for his compliance with the aforesaid Regulations and the dditional conditions (if any) contained in his licence, and the amount of such eposit or bond shall vary as follows according to the licence applied for:—

In respect of licence "A"	£50
In respect of licence "B"	£20
In respect of licence "C"	£10

The Resident issuing a licence shall require either a deposit or bond as in the rcumstances he shall deem fit.

By Command of His Excellency the Acting Governor.

H. L. DUFF,
Acting Deputy Governor.

ZOMBA, NYASALAND,
6th July, 1910.

FIFTH SCHEDULE.

nimals, limited numbers of which may be hunted, killed, or captured under Licences "A," "B," and "C."

Kind.	Number allowed.
1. Hippopotamus	6
2. Wart-hog	6
3. Bush-pig	6
4. The following antelopes and gazelles only—	
Hartebeest	30 animals in all under 1 licence, made up of animals of a single species or of several.
Impala	
Reedbuck	
Duiker	
Klipspringer	
Steinbuck	
Waterbuck	
Bushbuck	

SIXTH SCHEDULE.

Jo. 1.—Licence "A" (fee, 25l.), or Licence "B" (fee, 4l.), or Licence "C" (fee, 2l.).

A. B. of , is hereby licensed to hunt, kill, or capture wild animals ithin the British Central Africa Protectorate for the period from the date hereof ntil the 31st March, 19 , but subject to the provisions and restrictions of "The Game Regulations, 1902."

(The said *A. B.* is authorized, subject to the said Regulations, to kill or capture he following animals in addition to the number of the same species allowed by Regulations, that is to say:—

Dated this day of 19 .

Fee paid (...l).

(Signed) *Commissioner.*

SEVENTH SCHEDULE.

Game Reserves.

The Elephant Marsh Reserve (Amended by Proclamation of 31st Decemb 1906, see below).

The Lake Chilwa Reserve (Abolished by Proclamation of 31st December, 19 see below).

The Central Angoniland Reserve (Proclaimed by Proclamation of the 3 October, 1904, and amended by Proclamation of 31st December, 1906, see belo

[Extract from *B. C. A. Gazette* of 31st December, 1906.]

BRITISH CENTRAL AFRICA PROTECTORATE.

NOTICE.

The following Proclamation made under Section 11 of "The British Cent Africa Game Regulations, 1902," by His Majesty's Commissioner for the Brit Central Africa Protectorate with the approval of the Secretary of State for t Colonies, is published for general information.

(Signed) A. J. WILLIAMS,
Secretary to Administration.

ZOMBA, B. C. AFRICA,
31st December, 1906.

PROCLAMATION.

GAME RESERVES.

Whereas pursuant to section 11 of "The British Central Africa Gar Regulations, 1902," the Commissioner, with the approval of the Secretary State, may by Proclamation declare any portion of the Protectorate to be Game Reserve, and may define or alter the limits of any Game Reserve:

And whereas it has now been deemed expedient to alter the limits of t Elephant Marsh Reserve as defined in the Eighth Schedule annexed to the afor said Regulations and the limits of the Central Angoniland Reserve as defined Proclamation dated the 31st day of October, 1904:

Now therefore in virtue of the power vested in me as aforesaid I do hereb with the approval of the Secretary of State, proclaim and declare that the lim of the hereinbefore recited Game Reserves shall be as follows:—

1. THE ELEPHANT MARSH RESERVE.*

Commencing at a point on the left bank of the Shire River which point 2 miles in a straight line, up stream, from the confluence of the Ruo and Shi Rivers, the boundary shall be carried along the left bank of the Shire River, stream for a distance, measured in a straight line, of 10 miles; thence it sha be carried in an easterly direction at right angles to the general direction of th Shire River boundary, already described, for a distance of 4 miles or until th Cholo foot-hills wooded country is reached; thence it shall be carried along th edge of the wooded country in a southerly direction parallel to the gener

* Since opened for shooting.

irection of the Shire River boundary, already described, for a distance of
o miles, thence it shall be carried in a westerly direction to the point of com-
ıencement.

2. The Central Angoniland Reserve.

Commencing at the point on the Dedza-Lilongwe Road where this road is
rossed by the Tete River (a tributary of the Lintipe River) the boundary shall
e carried along the Tete River, up stream, to its source on the Anglo-Portuguese
atershed, thence it shall be carried along the Anglo-Portuguese boundary in a
esterly and northerly direction until it reaches the source of the Katete River
a tributary of the Lilongwe River) near Kazuzu peak on the Dzalanyama range
f hills; thence it shall be carried along the Katete River, down stream, to its
onfluence with the Lilongwe River; thence it shall be carried along the Lilongwe
iver, down stream, until the Dedza-Lilongwe Road is reached; thence it shall
e carried along this Dedza-Lilongwe Road in a south easterly direction to the
oint of commencement.

And I do hereby further proclaim and declare that The Lake Chilwa Reserve
s defined in the Eighth Schedule annexed to the aforesaid Regulations shall
ease to be a Game Reserve and shall henceforth be abandoned as such.

Given under my hand and the Seal of the
British Central Africa Protectorate at Zomba,
his thirty-first day of December, 1906.

L. S. (Signed) ALFRED SHARPE,
Commissioner.

BRITISH EAST AFRICA PROTECTORATE.

THE GAME ORDINANCE, 1909.

[*14th December*, 1909.]

Be it enacted by the Governor of the East Africa Protectorate with the advice
nd consent of the Legislative Council thereof :—

1. This Ordinance may be cited as "The Game Ordinance, 1909," and shall
ome into operation on its publication in the "Official Gazette."

2. In this Ordinance "The Protectorate" means the British East Africa Pro-
ectorate.

"Hunt, kill or capture" means hunting, killing or capturing by any method,
nd includes every attempt to kill or capture.

"Hunting" includes molesting.

"Game" means any animal mentioned in any of the Schedules.

"Chief game ranger" shall mean the officer for the time being in charge of the
Game Department.

"Game ranger" shall include the chief ranger and any game ranger or assis-
ant game ranger.

"Animal," save as herein expressly provided, means mammals, and birds other
han domesticated, but does not include reptiles, amphibia, fishes and inverte-
rate animals.

"Native" means any native of Africa, not being of European or American
ace or parentage.

"Resident" means a non-native who has satisfied the Commissioner of th province or district in which he resides that he is a *bonâ fide* resident in the Pro tectorate.

"Schedule" and "schedules" refer to the schedules annexed to this Ord nance.

"District Commissioner" includes an Assistant District Commissioner.

"Private land" means any land privately owned without a title from the Crown and any land held or occupied under a conveyance, lease or licence from th Crown. Provided however that the said term shall not include land occupied b the members of a native tribe or any land sold or leased or otherwise alienate by the Crown with a reservation of the game thereon.

General Provisions.

3. No person, unless he is authorised by a special licence in that behalf, sha hunt, kill or capture any of the animals mentioned in the First Schedule.

4. Save as in this Ordinance otherwise expressly provided no person unless h is authorised by a special licence in that behalf, shall hunt, kill or capture an animals of the kinds mentioned in the Second Schedule if the animal be (*a*) imma ture or (*b*) a female accompanied by its young.

5. No person, unless he is authorised under this Ordinance, shall hunt, kill o capture any animal mentioned in the Third or Fourth Schedules.

6. (i.) The Governor may, if he thinks fit, by Proclamation, remove any anima from any of the schedules, or declare that the name of any species variety, or sex of animal not mentioned in any schedule hereto, shall b added to a particular schedule, or that the name of any species or variet of animal mentioned or included in one schedule shall be transferred t another schedule, and, if he thinks fit, apply such Proclamation to th whole of the Protectorate, or to any province, district or other area.

(ii.) The Governor may, if he thinks fit, by Proclamation alter the number o the animals of any species mentioned in any of the schedules, which ma be hunted, killed or captured under a licence.

7. (1) Save as hereinafter provided no person shall export or shall attemp to export from the Protectorate for sale any head, horn, bone, skin feather, or flesh or any other part of any animal mentioned in any o the schedules, unless the animal has been kept in a domesticate state.

(2) Any District Commissioner or Customs Officer may lawfully detain an of the things mentioned in the preceding sub-section which it is sough to export until he shall be satisfied by the person seeking to export the same that such thing is not intended for sale.

(3) Nothing in this section contained shall be deemed to prevent the expor for sale of elephant ivory or hippopotamus tusks which have been lawfully obtained.

8. No person shall possess, store, pack, convey or export or attempt to expor any animal or any head, horn, bone, skin, feather or flesh or any other part o any animal which has been killed, captured or obtained in contravention of this Ordinance or of the East Africa Game Ordinance, 1906, or of any Ordinance law or Regulation repealed by the last named Ordinance, unless such anima

or such head, horn, bone, skin, feather, flesh or other part of an animal has been sold by order of the Governor or of a Court.

9. Any person who shall export or shall attempt to export for sale any part of any animal in contravention of section 7 or shall be in possession of or shall store, pack, convey, or export or attempt to export any animal or any part of any animal in contravention of section 8 of this Ordinance shall be guilty of an offence and on conviction shall be liable to a fine not exceeding seven hundred and fifty rupees and in default of payment to imprisonment for a term not exceeding two months and the animal or the part thereof in respect of which the offence shall have been committed shall be forfeited unless the Governor shall otherwise order.

10. When any animal mentioned in any of the Schedules hereto is killed by accident or when the carcase or remains of any animal shall be found, the head, horns, tusks, skin or feathers, of such animal shall belong to the Government; provided that the Governor may waive the right of the Government in this respect in any case as he may deem fit; and provided that the Governor may direct the payment to any person or persons so killing or finding of sufficient compensation as shall cover the cost of the transport of any ivory to the nearest station, and may direct rewards to be paid to the finder of any ivory. Any person removing the head, horns, tusks, skin or feathers of any animal killed by accident or forming part of the carcase or remains of any animal found dead with the intention of converting the same to his own use or of depriving the Government of the same shall be guilty of an offence against this Ordinance.

Nothing in this sub-section shall be deemed to prohibit the removal of any part of any animal lawfully killed under the provisions of this Ordinance by the person killing the same or by his servants or agent, or to make it an offence for any person to remove any part of any carcase or remains of any animal if such person is the holder of a licence which would authorise him to kill an animal of the same species, sex, and variety; provided, however, that in such a case the animal shall count towards the number of animals which such person is entitled to kill under his licence.

11. (1) No person shall possess, sell, transfer, export or attempt to sell, transfer or export any ivory which has been obtained in contravention of this Ordinance, or of "The East Africa Game Ordinance, 1906" or of any Ordinance or Regulations repealed by such last-mentioned Ordinance or any elephant tusk weighing less than 30 lbs., or any piece of ivory which formed part of a tusk under 30 lbs. in weight.

(2) Provided that the Governor or any person authorised by the Governor in that behalf may possess, sell or transfer within the Protectorate or may export from the East Africa Protectorate any ivory belonging to the Government or forfeited under the provisions of this Ordinance or of any Ordinance repealed by this Ordinance.

(3) All such ivory possessed, sold, transferred or exported under the provisions of the last preceding sub-section shall be distinctively marked with such mark and in such manner as the Governor by notice published in the "Official Gazette" may appoint.

(4) The purchaser or transferee of any ivory so sold or transferred under the provisions of sub-section 2 of this section shall lawfully possess such ivory and may lawfully export such ivory from the Protectorate.

(5) The Governor may make rules prescribing the conditions under which ivory may be introduced into the Protectorate for the purpose of transit through the Protectorate.

Notwithstanding anything in this section to the contrary such ivory introduced into the Protectorate for the purpose aforesaid and in accordance with the conditions imposed by such rules shall be deemed to be lawfully possessed and may be exported from the Protectorate.

12. (1) Any person who shall possess, sell, transfer, export or attempt to sell, transfer or export any ivory in contravention of the preceding section, shall be guilty of an offence, and shall be liable to a fine not exceeding three thousand rupees or to imprisonment of either description for a term not exceeding six months or to both fine and imprisonment, and the ivory shall be forfeited unless the Governor shall otherwise order.

(2) Whenever a person shall be charged with the offence of being in possession of or selling or transferring or exporting or attempting to sell, transfer or export any ivory obtained in contravention of this Ordinance or of "The East Africa Game Ordinance, 1906" or of any Ordinance or Regulations repealed by the last mentioned Ordinance it shall be sufficient if the summons or charge shall allege that the ivory was obtained in contravention of the law, without specifying the law, and the onus shall then be on the person accused to produce satisfactory proof that the ivory was lawfully obtained under a licence granted under one of the aforementioned Ordinances or Regulations;

Provided, however, that if the person accused shall fail to produce such proof but there shall not be sufficient evidence to prove that such person knew or ought to have known that the ivory was obtained in contravention of the law, the ivory shall be forfeited, but the person accused shall not be liable to either a fine or imprisonment.

13. No person shall use any poison, or, without a special licence, any dynamite or other explosive for the killing or taking of any fish.

14. Where it appears to the Governor that any method used for killing or capturing animals is unduly destructive, he may, by proclamation, prohibit such method or prescribe the conditions under which any method may be used, and if any person use any method so prohibited, or use any method otherwise than according to the conditions so prescribed, he shall be liable to the same penalties as are provided in section 40 of this Ordinance.

Game Reserves.

15. (1) The areas described in the Fifth Schedule hereto are hereby declared to be game reserves.

The Governor, with the approval of the Secretary of State, may by Proclamation declare any other portion of the Protectorate to be a game reserve, and may define or alter the limits of any game reserve, and this Ordinance shall apply to every such game reserve.

(2) Save as provided in section 23 of this Ordinance any person who hunts, kills or captures any animal in a game reserve, or is found within a game reserve under circumstances showing that he was unlawfully in pursuit of any animal, shall be guilty of an offence against this Ordinance.

GAME LICENCES.

16. (1) The following licences may be granted by a Provincial Commissioner or a District Commissioner or by such other person as may be authorised by the Governor on that behalf, that is to say:—

(1) A sportsman's licence.
(2) A resident's licence.
(3) A traveller's licence.
(4) A landholder's licence.

(2) The following fees shall be paid for licences:—for a sportsman's licence 750 rupees; for a resident's licence 150 rupees; for a traveller's licence 15 rupees; and for a landholder's licence 45 rupees.

(3) A sportsman's licence, a resident's licence, and a landholder's licence shall be in force for one year from the date of issue. A traveller's licence shall be in force for one month from the date of issue. Provided that a "resident's licence" may be granted for a single period of 14 consecutive days on payment of a fee of 30 rupees, but not more than one such licence shall be issued to the same person within a period of twelve months.

(4) Every licence shall bear the name in full of the person to whom it is granted, the date of issue, the period of its duration, and the signature of the person granting the same.

(5) A licence granted under this Ordinance is not transferable.

(6) The holder of a licence shall on demand being made by a magistrate, justice of the peace, game ranger or any police officer, produce his licence to such magistrate, justice of the peace, game ranger or officer, and any licence holder who fails without reasonable cause to produce his licence shall be guilty of an offence against this Ordinance.

17. A resident's licence shall not be granted except to a resident or to an officer in the public service of the Protectorate or to an officer of one of His Majesty's ships on the East Africa station.

18. A sportsman's licence, and a resident's licence respectively shall authorise the holder to hunt, kill or capture animals of any of the species mentioned in the Third Schedule, but not more than the number of each species fixed by the second column of that schedule.

19. Any game other than animals mentioned in the First Schedule killed or captured by the holder of a sportsman's or resident's licence upon private land with the consent of the owner or occupier of the land shall not count towards the number of animals which the holder of the licence is entitled to kill or capture under his licence.

20. A traveller's licence authorises the holder to hunt, kill or capture on land other than private land animals of the species and to the number mentioned in the Fourth Schedule and on private land with the consent of the owner or occupier any animal or animals mentioned in the Third Schedule.

21. (1) An occupier of land may take out a landholder's licence and may also take out a similar licence at the same fee for any person permanently employed by him in connection with the land.

(2) The licence shall only permit game to be hunted, killed, or captured:—

(*a*) on the land of the holder of the licence or of his employer who has taken out the licence.

(*b*) with the sanction of the owner or occupier, on private land.

(3) The licence shall not authorise any animal mentioned in the First Schedule to be hunted, killed or captured saving only that the holder of a licence may hunt and capture any eland.

(4) The licence shall not authorise the holder to kill any eland.

(5) Save as in this section otherwise provided the holder of a landholder's licence may hunt, kill or capture any game.

22. Any landholder, or his servant, finding an animal mentioned in the schedules spoiling his crops or doing damage to his holding may kill the same without a licence if such act is necessary for the protection of his crops or holding. Provided, however, whenever an elephant shall be killed under the provisions of this section, the tusks shall be the property of the Government and shall be dealt with as the Governor may direct.

23. When it appears proper to the Governor for scientific or administrative reasons he may grant a special licence to any person, to kill or capture animals of any one or more species mentioned in any of the schedules or to kill, hunt or capture in a game reserve specified beasts or birds of prey, or other animals whose presence is detrimental to the purposes of the game reserve; or for scientific reasons to kill or capture, as the case may be, any animal or animals in a game reserve.

A special licence shall be subject to such conditions as to fees and security (if any), number, sex, and age of specimens, district and seasons for hunting, and other matter, as the Governor may prescribe.

Save as aforesaid, the holder of a special licence shall be subject to the provisions of this Ordinance.

24. (1) A Provincial or District Commissioner may on the application of the holder of a sportsman's or resident's licence grant a special licence authorising such person to hunt, kill or capture either one or two elephants as the applicant shall require and as shall be specified therein. Such special licence shall not authorise the holder to hunt, kill or capture any elephant having tusks weighing less than 30 lbs. each.

(2) There shall be paid for such special licence the fees following:—

For a licence to hunt, kill or capture one elephant	... ...	Rs. 150
For a licence to hunt, kill or capture two elephants	... ...	„ 450

(3) Every licence granted under this section shall expire on the same date as the sportsman's or resident's licence held at the time of the granting of such special licence by the person to whom the same shall be granted and only one such special licence shall be granted to such person during the period of any such sportsman's or resident's licence. Provided, however, if such person shall have taken out a special licence authorising him to hunt, kill or capture one elephant only, he may on payment of a further fee of Rs. 300 be granted a licence authorising him to hunt, kill or capture a second elephant.

(4) Any person who having obtained a licence authorising him to hunt, kill or capture two elephants or who having obtained a licence authorising him to hunt, kill or capture a second elephant shall satisfy the chief game ranger by a declaration and in such other manner (if any) as the

chief game ranger may require that he has killed or captured no elephant or only one elephant under his licence or licences, as the case may be, he shall either on the expiration or on the surrender of his licence or licences be entitled to a refund of Rs. 300.

25. A Provincial or District Commissioner may grant to the holder of a sportsman's or resident's licence a special licence authorising such person to hunt, kill or capture one bull giraffe. There shall be paid for such special licence a fee of 50 rupees. The provisions of sub-section 3 of the preceding section save as to the proviso thereto shall apply to every such licence.

A special licence granted under this section shall not authorise the holder to hunt, kill or capture giraffe in the Fort Hall district of the Kenia Province, or in the Machakos district of the Ukamba Province.

26. Every person who shall obtain a special licence under either of the two preceding sections shall produce to the officer granting the same his sportsman's or resident's licence and such officer shall endorse thereon the fact of such special licence having been granted and the nature of the licence.

27. The holder of a special licence issued under sections 24 or 25 who shall hunt, kill or capture any animal which he is not authorised to hunt kill or capture or any animal in excess of the number authorised by such licence shall be guilty of an offence against this Ordinance.

28. Any person who shall make a false declaration for the purposes of sub-section 4 of section 24 of this Ordinance shall, on conviction, be liable to a fine not exceeding one thousand rupees or to imprisonment of either description for a term not exceeding three months or to both fine and imprisonment.

29. The Governor may by rule prescribe the forms of licences issued under the provisions of this Ordinance.

Every licence holder shall keep a register of the animals killed or captured by him in the form specified in the sixth schedule.

Any person authorised to grant licences or any magistrate, justice of the peace or game ranger may at any time call upon any licence holder to produce his register for inspection.

Every holder of a licence must within 15 days after his licence has expired produce or send to the District Commissioner of the district in which he resides the register of the animals killed or captured by him under his licence.

Every person holding a licence shall before leaving the Protectorate submit his register to the chief game ranger.

If any holder of a licence fails to keep his register truly or to produce his licence as required by this section he shall be guilty of an offence against this Ordinance.

30. The Governor may revoke any special licence issued by him when he is satisfied that the holder has been guilty of a breach of any of the provisions of this Ordinance or of the conditions of his licence, or has connived with any other person in any such breach, or that in any matters in relation thereto he has acted otherwise than in good faith.

31. The Governor may at his discretion direct that a licence under this Ordinance shall be refused to any applicant.

32. Any person whose licence has been lost or destroyed may obtain a fresh licence for the remainder of the term of the licence lost or destroyed on payment of a fee of five rupees.

33. No licence granted under this Ordinance shall entitle the holder to hunt kill, or capture any animal, or to trespass on private land without the consent of the owner or occupier.

34. Any person who, after having killed or captured animals to the number and of the species authorised by his licence, proceeds to hunt, kill or capture any animals which he is not authorised to kill or capture, shall be guilty of a breach of this Ordinance.

35. It shall be unlawful to hunt with dogs any game on land other than private land. Every person concerned in a breach of the provision of this section shall be guilty of an offence against this Ordinance.

Restrictions on Killing Game by Natives.

36. When the members of any native tribe or the native inhabitants of any village appear to be dependent on the flesh of wild animals for their subsistence, or when it is shown that any wild animals are causing damage to the lands or property of any natives, the District Commissioner of the district may with the approval of the Governor, by order addressed to the chief of the tribe or headman of the village, authorise the tribesmen or inhabitants, as the case may be, to kill animals within such area, and subject to such conditions as to mode of hunting, number, species, and sex of animals and otherwise as may be prescribed by the order.

The provisions of this Ordinance with respect to the keeping of registers shall not apply to a member of a tribe or native inhabitant of a village to which an order under this section applies.

Save as aforesaid, the general provisions of this Ordinance shall apply to every native who is authorised under this section, and a breach of any order shall be an offence against this Ordinance.

Procedure and Penalties.

37. (1) When a person is seen or found committing an offence or is reasonably suspected of having committed or of being engaged in committing an offence against this Ordinance, any magistrate, justice of the peace, police officer or game ranger may, without warrant, stop and detain him, and if his name and address are not known to the magistrate, justice of the peace, officer or ranger and such person fails to give them to his satisfaction or if the officer or ranger has reason to believe that except by arresting such person he may not afterwards be found or made answerable to justice without delay, trouble or expense, he may without warrant apprehend him.

(2) A person apprehended under this section shall be taken with all practicable speed before a magistrate and shall not be detained without a warrant longer than is necessary for the purpose.

38. Whenever any magistrate, justice of the peace, police officer or game ranger thinks it expedient for the purposes of verifying the register of a licence-holder, or suspects that any person has been guilty of an offence against this Ordinance, or of committing a breach of the conditions of his licence, he may inspect and search, or authorise any subordinate officer to inspect and search, any baggage, package, waggon, tent, building, or caravan belonging to or under

he control of such person or his agent, and if the magistrate, justice of the peace, fficer or ranger finds any head, horn, tusk, skin, feather or other remains of any nimal or any live animal appearing to have been killed, captured, obtained or ealt with or to be possessed in contravention of this Ordinance he shall seize nd take the same before a magistrate to be dealt with according to law.

39. Any magistrate, justice of the peace, police officer or game ranger may nter upon any land for the purpose of this Ordinance or for the purpose of reventing or detecting offences against this Ordinance.

40. Any person who hunts, kills or captures any animal in contravention of his Ordinance or otherwise commits any offence against this Ordinance for and n respect of which no penalty is specially provided, or commits a breach of this Ordinance or of the conditions of his licence shall, on conviction, be liable to a ine which may extend to one thousand rupees, and where the offence relates to nore animals than two, to a fine in respect of each animal which may extend to ive hundred rupees and in either case to imprisonment of either description vhich may extend to two months, with or without a fine.

In all cases of conviction any animal or any head, horn, tusk, skin, feather, or ther remains of any animal obtained or possessed in contravention of this Ordinance or of the conditions of a licence shall be forfeited unless the Governor hall otherwise order. If the person convicted is the holder of a licence his icence may be revoked by the Court.

41. Where in any proceeding under this Ordinance any fine is imposed, the Court may award any sum or sums not exceeding half the total fine to any nformer or informers.

Repeal.

42. The East Africa Game Ordinance, 1906 is hereby repealed;

Provided as follows:—

(1) Where any legal proceedings have been begun under the said repealed Ordinance the same shall be continued as if this Ordinance had not been enacted.

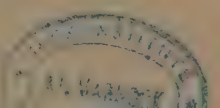
(2) Any person who has before the commencement of this Ordinance committed an offence against the said repealed Ordinance or committed any breach of the provisions of the said Ordinance or of the conditions of any licence granted thereunder, and which offence or breach cannot be punished under this Ordinance shall be proceeded against and punished as if this Ordinance had not been enacted.

(3) Licences issued under the said repealed Ordinance unexpired at the commencement of this Ordinance shall remain in force for the period for which they were granted, as if this Ordinance had not been enacted; Provided, however, that a landholder's licence shall be deemed to confer upon the holder the same privileges as are conferred by a landholder's licence issued under this ordinance and a settler's licence shall authorise the holder to kill animals of the species and to the number authorised by a resident's licence.

First Schedule.

Animals not to be hunted, killed or captured by any person except under pecial licence.

1. Elephant.



2. Giraffe.
3. Greater Kudu Bull (in the district of Baringo).
4. Greater Kudu (female).
5. Buffalo (Cow).
6. Neumann's Hartebeest in the area (2) of 7 of this schedule.
7. Eland in the following areas:—

(1) An area bounded, on the south by a line drawn from Kiu Station due east to the western boundary of the Machakos Native Reserve, on the east by the Machakos Native Reserve to a point where the Athi River enters the said reserve, thence by the Athi River to a point due north of Donyo-Sabuk thence by a line drawn direct to Fort Hall, on the north by the Nairobi-Fort Hall main road, on the West by Uganda Railway.

(2) Rift Valley south of Lake Baringo.

(3) Uasin Gishu Plateau south of the Nzoia River.

8. Roan (female).
9. Roan (male) in areas (1) and (2) of 7 of this schedule.
10. Sable (female).
11. Rhinoceros (on the north-east side of the Uganda Railway and within 10 miles thereof between Sultan Hamud and Machakos Road Stations).
12. Vulture (any species).
13. Owl (any species).
14. Hippopotamus (in Lakes Naivasha, Elmenteita and Nakuru).
15. Fish Eagle.

Second Schedule.

Animals, the females of which are not to be hunted, killed or captured when accompanying their young and the young of which are not to be hunted, killed or captured except under special licence.

1. Rhinoceros.
2. Hippopotamus.
3. All Antelopes and Gazelles mentioned in any schedule.

Third Schedule.

Animals, a limited number of which may be killed or captured under a sportsman's or resident's licence.

Kind.	Number allowed.
1. Buffalo (Bull)	2
2. Rhinoceros, except as provided in the First Schedule	2
3. Hippopotamus, except as provided in the First Schedule	2
4. Eland, except as provided in the First Schedule	1
5. Zebra (Grevy's)	2
6. Zebra (Common)	20
7. Oryx (Callotis)	2
8. Oryx (Beisa)	4
9. Waterbuck (of each species)	2
10. Sable Antelope (male)	1

Kind.	Number allowed.
11. Roan Antelope (male), except as provided in the First Schedule	1
12. Greater Kudu (male), except as provided in the First Schedule	1
13. Lesser Kudu	4
14. Topi	2
15. Topi (in Jubaland, Tanaland and Loita Plains)	8
16. Coke's Hartebeest	20
17. Neumann's Hartebeest, except as provided in the First Schedule	2
18. Jackson's Hartebeest	4
19. Hunter's Antelope	6
20. Thomas Kob	4
21. Bongo	2
22. Palla	4
23. Situtunga	2
24. Wildebeest	3
25. Grant's Gazelle. Four varieties, Typicus, Notata, Bright's and Robertsi, of each	3
26. Waller's Gazelle (Gerenuk)	4
27. Harvey's Duiker	10
28. Isaac's „	10
29. Blue „	10
30. Kirk's Dik Dik	10
31. Guenther's Dik Dik	10
32. Hinde's „ „	10
33. Cavendish's „ „	10
34. Abyssinian Oribi	10
35. Haggard's „	10
36. Kenya „	10
37. "Suni" (Nesotragus Moschatus)	10
38. Klipspringer	10
39. Ward's Reedbuck	10
40. Chanler's „	10
41. Thompson's Gazelle	10
42. Peter's Gazelle	10
43. Soemmerring's Gazelle	10
44. Bushbuck	10
45. Bushbuck (Haywood's)	10
46. Colobi Monkeys of each species	6
47. Marabout	4
48. Egret of each species	4

Fourth Schedule.

Animals, a limited number of which may be killed or captured on a traveller's cence.

Zebra	4

The following Antelopes and Gazelles only.

Grant's Gazelle Thomson's Gazelle Jackson's and Coke's Hartebeest Palla Reedbuck Klipspringer Steinbuck Wildebeest Paa (Medoqua and Nesotragus) Oryx beisa Bush Buck Waller's gazelle Topi (in Jubaland, Tanaland and Loita Plains)	Five animals in all, made up of a single species or of several, provided, however, that not more than one of each of the following may be shot on one licence :— 1. Grant's Gazelle. 2. Palla. 3. Wildebeest. 4. Oryx beisa. 5. Bush Buck. 6. Waller's Gazelle. 7. Topi. 8. Jackson's Hartebeest.

FIFTH SCHEDULE.

Game Reserves.

1. The Southern Reserve.

An area bounded by a line following the right bank of the Ngong River from the railway line to the edge of the Kikuyu Forest, along the edge of the forest to a beacon at the point where the M'bagathi River leaves the forest by a line of beacons to the survey beacon on the Ngong Hills (Donyo Lamuyu), thence to Mt. Suswa by a line of beacons and from Suswa due west to the Mau escarpment which it follows south to the Uaso Nyiro and by the left bank of the river to the German frontier.

Thence following the German frontier to the Tsavo (Useri) River.

By the left bank of the Tsavo River to a beacon at the point where the Ngulia and Kyulu Hills approach the river. Thence following the foot of the eastern slopes of Kyulu Hills to the Makindu River which it follows to the Uganda Railway.

From the Makindu River the line follows the Railway to the Ngong River.

2. The Northern Reserve.

Eastern Boundary.

Starting from the ford at "Campi ya Nyama Yangu" on the northern Uaso Nyiro River the boundary follows the eastern slopes of the following hills:—

Mt. Koiseku
Mt. Kalama
Mt. Lololugi
Mt. Wargies (Table Mountains)
Mt. Loe
Mt. Endata
Mt. Kulal.

From Mt. Kulal by a line north-east to Mount Moille thence following the eastern slopes of this mount and Mount Seramba, Mount Loder Moretu and Mount Kul.

From Mount Kul to a beacon on the western side of Mount Marsabit.

Northern Boundary.

From the beacon on the western side of Mount Marsabit by a straight line west to Mount Nyiro.

Western Boundary.

From Mount Nyiro following the foot of the Laikipia Escarpment to the Iugatan River.

Thence in a direct line to the junction of the Uaso Nyiro and Uaso Narok.

Southern Boundary.

Thence following the left bank of Uaso Nyiro to the ford at "Campi ya Nyama angu."

UGANDA PROTECTORATE.

AN ORDINANCE.

Enacted by His Britannic Majesty's Commissioner for the Uganda Protectorate.

ENTEBBE, 16th October, 1906.

H. HESKETH BELL,
His Majesty's Commissioner.

No. 9 OF 1906.

GAME.

1. This Ordinance may be cited as "The Uganda Game Ordinance, 1906."

2. In this Ordinance "The Protectorate" means the Uganda Protectorate.

"Hunt, kill, or capture" means hunting, killing, or capturing by any method, nd includes every attempt to kill or capture.

"Hunting" includes molesting.

"Animal" save as herein expressly provided, means mammals, and birds other han domesticated but does not include reptiles, amphibia, fishes and invertebrate nimals.

"Game" means any animal mentioned in any of the schedules.

"Public officer" means a European officer in the public service of the Uganda r East Africa or Zanzibar Protectorates, or on the Superior Establishment of the Jganda Railway, or an officer of one of His Majesty's ships on the East African tation or a European officer in the public service of the Sudan Government.

"Native" means any native of Africa, not being of European or American race r parentage.

"Settler" means a person for the time being resident in the Protectorate not eing a public officer or a native.

"Sportsman" means a person who visits the Protectorate wholly or partly for porting purposes, not being a public officer, settler or a native.

"Collector" means the principal civil officer in charge of a district of the rotectorate.

"Schedule" and "schedules" refer to the schedules annexed to this Ordinance.

GENERAL PROVISIONS.

3. (1) No person, unless he is authorized by a special license in that behalf, hall hunt, kill or capture any of the animals mentioned in the First Schedule.

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[1] Amended 1911 by addition of words "Provided always that only animals vhich are killed and captured shall be counted on a license, and that any person uly licensed may hunt, kill, or capture permitted animals, until the number killed r captured shall amount to the number permitted on the license."

(2) No person, unless he is authorized by a special license under this Ordinance, shall hunt, kill or capture any animal of the kinds mentioned in the Second Schedule if the animal be (*a*) immature or (*b*) a female accompanied by its young.

4. No person, unless he is authorized under this Ordinance, shall hunt, kill or capture any animal mentioned in the Third Schedule.

5. The Commissioner may, if he thinks fit, by Proclamation, remove any animal from any of the schedules, or declare that the name of any species, variety, or sex of animal, whether beast or bird not mentioned in any schedule hereto, shall be added to a particular schedule, or that the name of any species or variety of animal mentioned or included in one schedule shall be transferred to another schedule, and, if he thinks fit, apply such Proclamation to the whole of the Protectorate, or to any province, district or other area.

6. (1) Save as hereinafter provided no person shall export from the Protectorate for sale or shall within the Protectorate sell, or purchase, or offer or expose for sale any head, horn, bone, skin, feather, flesh or any other part of any animal mentioned in any of the schedules, unless such animal has been kept in a domesticated state.

(2) Save as hereinafter provided no person shall collect, export from the Protectorate for sale, or shall within the Protectorate sell, or purchase, or offer, or expose for sale any ostrich egg unless the ostrich has been kept in a domesticated state.

(3) No person shall knowingly store, pack, convey, or export any animal or any part of any animal or any ostrich egg which he has reason to believe has been obtained in contravention of this Ordinance.

(4) Ostrich eggs, or any animal or any heads, horns, tusks, skins, feathers or other remains of any animals mentioned in any of the schedules hereto shall be liable to forfeiture if they have been obtained in contravention of this Ordinance.

(5) Notwithstanding anything contained in this section any ostrich eggs or any heads, horns, tusks, skins, feathers or other remains of any animals mentioned in the schedules may be sold in the following cases and under the following conditions :—

(*a*) If they form part of the estate of a deceased person, by the Administrator General or personal representative of such deceased person, with the consent of the Court granting probate or administration, and on payment of such fee as the Court directs, not exceeding 20 rupees.

(*b*) If they have been forfeited, by the order of the Commissioner or of the Court by which they have been declared to be forfeited.

(6) In any sale under sub-section 5 of this section purchasers shall in every case be given a certificate specifying the articles and declaring that they have been lawfully sold under the provisions of this Ordinance, and such certificate shall be evidence that the purchaser has not obtained the goods in contravention of this Ordinance.

(7) Nothing contained in this section shall prevent the sale, purchase, transfer or export of elephant ivory or hippopotamus tusks which have been obtained without a contravention of this Ordinance.

(8) When any animal mentioned in any of the schedules hereto is killed by accident, or when the carcase or remains of any animal shall be found, the head, horns, tusks, and feathers of such animal shall belong to the Government;

Provided that the Commissioner may waive these rights in any case as he may deem fit; and,

Provided that the Commissioner may direct the payment to any person or persons so killing or finding such compensation as shall cover the cost of transport of any ivory to the nearest station; and

May direct rewards to be paid for the finding of ivory.

7. (1) Save as hereinafter provided any person found in possession of, or selling, transferring, or exporting, or attempting to sell, transfer or export any male elephant's tusk weighing less than 11 lbs. or any female elephant's tusk, or any pieces of ivory which, in the opinion of any officer engaged in the civil administration of the Uganda Protectorate, formed part of a male elephant's tusk under 11 lbs. in weight, or of a female elephant's tusk, shall be guilty of an offence, and shall be liable to a fine not exceeding 1,000 rupees or two months' imprisonment of either kind, or to both, and the tusk or parts of a tusk shall be confiscated unless the Commissioner shall otherwise order.

(2) Provided that the Commissioner or any person authorized by the Commissioner in that behalf may possess, sell, or transfer within the Uganda Protectorate or may export from the Uganda Protectorate any ivory belonging to the Government or confiscated under the provisions of this Ordinance or of any regulation or Ordinance repealed by this Ordinance.

(3) All such ivory possessed, sold, transferred or exported under the provisions of the last preceding sub-section shall be distinctively marked with such mark and in such manner as the Commissioner by notice published in the "Official Gazette" may appoint.

(4) The purchaser or transferee of any ivory so sold or transferred under the provisions of sub-section 2 of this section shall lawfully possess such ivory and may lawfully export such ivory from the Uganda Protectorate.

(5) The provisions of sub-section 1 of this section shall not apply to any ivory lawfully possessed by any person at the date of the publication of this Ordinance provided that such ivory shall within three months of the publication of this Ordinance be produced or sent to the nearest collector, who shall mark such ivory with such mark and in such manner as the Commissioner may appoint.

8. No person shall use any poison, or, without a special license, any dynamite or other explosive for the killing or taking of any fish.

9. Where it appears to the Commissioner that any method used for killing or capturing animals or fish is unduly destructive, he may, by Proclamation, prohibit such method or prescribe the conditions under which any method may be used; and if any person uses any method so prohibited, or uses any method otherwise than according to the conditions so prescribed, he shall be liable to the same penalties as for a breach of this Ordinance.

10. Save as provided by this Ordinance, or by any Proclamation under this Ordinance, any person may hunt, kill, or capture any animal not mentioned in any of the Schedules, or any fish.

GAME RESERVE.

11. (1) The areas described in the Sixth Schedule hereto are hereby declared to be game reserves.

The Commissioner, with the approval of the Secretary of State, may by Proclamation declare any other portion of the Protectorate to be a game reserve, may

define or alter the limits of any game reserve, and this Ordinance shall apply to every such game reserve.

(2) Save as provided in this Ordinance, any person who hunts, kills, or captures any animal in a game reserve, or is found within a game reserve under circumstances showing that he was unlawfully in pursuit of any animal, shall be guilty of a breach of this Ordinance.

(3) The Commissioner may by notice, to be published as directed by him, exempt from protection any animal in a game reserve.

(4) For the purpose of this section the term animal shall be deemed not to exclude reptiles, amphibia, fishes, and invertebrate animals.

LICENSES TO EUROPEANS, ETC.

12. The following licenses may be granted by the Commissioner or any collector or such person or persons as may be authorized by the Commissioner, that is to say:—

(1) A sportsman's license;
(2) A public officer's license;
(3) A settler's license;
(4) A landholder's license; and
(5) A bird license.

The following fees shall be payable for licenses, that is to say, for a sportsman's license, 750 rupees, for a public officer's license or a settler's license 150 rupees, for a landholder's license 45 rupees, and for a bird license 5 rupees.

Every license shall except as hereinafter provided be in force for one year only from the date of issue.

Provided that a public officer's license may be granted for a single period of 14 consecutive days on payment of a fee of 30 rupees, but no other such license shall be issued to such officer within a period of twelve months from the date of issue of such license.

Every license shall bear the name in full, of the person to whom it is granted, the date of issue, the period of its duration, and the signature of the Commissioner, collector or other person authorized to grant licenses.

The applicant for a license may be required to give security by bond or deposit not exceeding 2,000 rupees for his compliance with this Ordinance, and with the additional conditions (if any) contained in his license.

A license is not transferable.

Every license must be produced when called for by any officer of the Protectorate Government, and any license holder who fails without reasonable cause to produce it when called for shall be guilty of an offence against this Ordinance.

In granting licenses under this Ordinance a collector or any person authorized to grant licenses shall observe any general or particular instructions of the Commissioner.

[1]13. A sportsman's license, and a public officer's license respectively authorize the holder to hunt, kill, or capture animals of any of the species mentioned in the Third Schedule, but unless the license otherwise provides, not more than the number of each species fixed by the second column of that Schedule.

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[1] Does not include the right to kill an elephant in case of a public officer (Amended Ordinance of 1911).

The holder of a sportsman's or public officer's license granted under this Ordinance may by the license be authorized to kill or capture additional animals of any such species on payment of such additional fees as may be prescribed by the Commissioner.

The Commissioner may in special cases grant at a fee of 150 rupees a sportsman's license to a person entitled to take out a settler's license.

14. A settler's license authorizes the holder to hunt, kill or capture animals of the species and to the number mentioned in the Fourth Schedule only.

15. (1) A public officer's license shall not be granted except to a public officer, and a settler's license shall not be granted except to a settler, but a sportsman's license may be granted to a settler.

(2) The holder of a settler's or landholder's license may surrender his license and take out a sportsman's license; and in such a case the sum which has been paid in respect of the surrendered license shall be deducted from the sum which such person would otherwise be required to pay for a sportsman's license; provided that a sportsman's license so granted shall expire on the same date as that on which the surrendered license would have expired and that all animals captured or killed under the surrendered license shall count towards the animals which may be captured or killed under the sportsman's license.

16. Should the holder of a public officer's license cease to be a public officer during the currency of such license his license shall thereupon expire.

Provided that if the person whose license has expired under the provisions of this section alone takes out a sportsman's license the sum which has been paid by such person in respect of the license so expired shall if such person so elects be deducted from the sum which he would otherwise be required to pay for a sportsman's license.

Provided that in such case all animals killed under the license which has so expired shall count towards the animals which may be killed under the sportsman's license, and the sportsman's license shall expire on the same date as that on which the original license would have expired if the holder thereof had continued to be a public officer.

17. A fourteen day license granted to a public officer who has previously held a public officer's license, or a public officer's license granted to a person who has previously held a public officer's fourteen day license, shall, if taken out within six months of the expiry of the former license authorize the holder to kill or capture such number only of animals as, with the number killed or captured under the former license, will make up the number fixed for a public officer's license.

[1] 18. When a license similar to a public officer's license under this Ordinance has been granted in the East Africa Protectorate, that license shall authorize the holder to hunt, kill, or capture game in the Uganda Protectorate, in all respects as if the license had been granted in the Uganda Protectorate, provided that such license shall be first indorsed by a collector or other authorized officer of the Uganda Protectorate: provided also that any authority to kill or capture additional animals not permitted under the corresponding Uganda license shall be void.

19. (1) An occupier of land may take out a landholder's license and may also

[1] Repealed, 1911.

take out a similar license at the same fee for any person permanently employed by him in connection with the land.

(2) The license shall only permit game to be hunted, killed, or captured on the land of the holder of a license or of his employer who has taken out the license.

(3) The license will not authorize animals in the First Schedule or the females or young of animals mentioned in the Second Schedule to be hunted, killed or captured.

(4) The license shall permit the animals mentioned in the Third and Fourth Schedules to be hunted, killed or captured and the limitation of the number of animals to be hunted, killed or captured therein contained shall not apply.

(5) Except as otherwise provided in this section the holder of a landholder's license will be subject in all respects to the provisions of this Ordinance.

20. When a person holding a landholder's license holds also a settler's license, animals killed or captured on his own land under his landholder's license shall not count towards the animals he is entitled to kill under his settler's license.

21. Any landholder, or his servant, finding an animal mentioned in the schedules spoiling his crops or doing damage to his holding may kill the same if such act is necessary for the protection of his crops or holding, but he shall give notice thereof to the collector of the district without delay, and the head, horns, tusks, and skin shall be the property of the Government, and shall be dealt with as the collector may direct.

22. Animals mentioned in the schedules killed or captured by the holder of a license other than a landholder's license upon private land at the request of the occupier and for protection of his crops or holding shall not count towards the number of animals that person is entitled to kill under his license, but in such case the head, horns, tusks, and skins of such animals shall be the property of the Government, and shall be dealt with as the collector may direct.

23. (1) A bird license shall, subject to the provisions of this Ordinance, entitle the holder to shoot any of the birds mentioned in the Fifth Schedule only.

(2) The Commissioner may by Proclamation order any area in the Uganda Protectorate to be closed for any period specified in the Proclamation in respect of the killing or capturing of any or all species of wild birds.

(3) Any person who shall kill or capture, or attempt to kill or capture by any means whatsoever, or who shall have in his possession any wild bird captured in contravention of sub-section 2 of this section within the area to which such Proclamation is applied and within the period specified therein shall be guilty of an offence under this Ordinance.

Provided that no person shall be liable to be convicted under the provisions of sub-section 3 of this section for the unlawful possession of such wild bird if he satisfies the Court before which he is charged either that :—

(*a*) The killing or capturing of such wild bird, if in a place with regard to which the provisions of sub-section 2 of this section have been applied was lawful at the time when and by the person by whom it was killed or captured, or

(*b*) The wild bird was killed or captured in some place to which the provisions of sub-section 2 of this section was not applied.

24. No person shall be entitled to hunt, kill, or capture animals mentioned in

the schedules on private lands in the occupation of another person other than his employer, unless he is duly licensed under the provisions of this Ordinance.

25. Where it appears proper to the Commissioner for scientific or administrative reasons, he may grant a special license to any person, not being a native, to kill or capture animals of any one or more species mentioned in any of the schedules; or, to kill, hunt, or capture in a game reserve specified beasts or birds of prey, or other animals whose presence is detrimental to the purposes of the game reserve; or, in particular cases, to kill, or capture, as the case may be, in a game reserve, an animal or animals of any one or more species mentioned in the schedules.

The Commissioner may, if he thinks fit, grant a special license to any person, European or American, resident in any station situate in or near a game reserve, to kill or capture specified birds and noxious animals in such game reserve or such part thereof as shall be defined on such license or otherwise.

A special license shall be subject to such conditions as to fees and security (if any), number, sex, and age of specimens, district and season for hunting, and other matters, as the Commissioner may prescribe.

Save as aforesaid, the holder of a special license shall be subject to the general provisions of this Ordinance, and to the provisions relating to holders of licenses.

26. The Commissioner may by rule prescribe the forms of licenses issued under the provisions of this Ordinance.

Every license holder shall keep a register of the animals killed or captured by him in the form specified in the Seventh Schedule.

The register with a copy thereof shall be submitted as often as convenient, but not less frequently than once in three months, to the nearest collector or assistant collector, who shall countersign the entries up to date and retain the copy.

Any person authorized to grant licenses may at any time call upon any license holder to produce his register for inspection.

Every holder of a license must within 15 days after his license has expired produce or send to the collector of the district in which he resides the register, and a copy thereof, of the animals killed or captured by him under his license.

If any holder of a license fails to keep his register truly or to produce it as required by this section he shall be guilty of an offence against this Ordinance.

27. The Commissioner may revoke any license when he is satisfied that the holder has been guilty of a breach of any of the provisions of this Ordinance or of the conditions of his license, or has connived with any other person in any such breach, or that in any matters in relation thereto he has acted otherwise than in good faith.

28. The Commissioner may at his discretion direct that a license under this Ordinance shall be refused to any applicant.

29. Any person whose license has been lost or destroyed may obtain a fresh license for the remainder of his term on payment of such a fee as the licensing authority may fix, not exceeding 5 rupees.

30. No license granted under this Ordinance shall entitle the holder to hunt, kill, or capture any animal, or to tresspass upon property without the consent of of the owner or occupier.

31. Any person who, after having killed or captured animals to the number and of the species authorized by his license, proceeds to hunt, kill, or capture any animals which he is not authorized to kill or capture, shall be guilty of a breach of this Ordinance.

32. Persons in the employment of holders of licenses may, without license assist such holders of licenses in hunting animals, but shall not use fire-arms.

In any case of a breach of the provisions of this section the license of every license holder concerned in the breach shall be liable to forfeiture, and such license holder shall be guilty of an offence.

33. The Commissioner or any person authorized by him in that behalf may, at his discretion, require any person importing fire-arms or ammunition that may be used by such person for the purpose of killing game or other animals to take out a license under this Ordinance, and may refuse to allow the fire-arms or ammunition to be taken from the public warehouse until such license is taken out. Save as aforesaid, nothing in this Ordinance shall affect the provisions of "The Uganda Fire-arms Regulations, 1896," or any Ordinance amending or substituted for the same.

Restriction on Killing Game by Natives.

34. When the members of any native tribe or the native inhabitants of any village appear to be dependent on the flesh of wild animals for their subsistence the collector of the district may with the approval of the Commissioner, by order addressed to the chief of the tribe or headman of the village, authorize the tribesmen or inhabitants as the case may be, to kill animals within such area, and subject to such conditions as to mode of hunting, number, species, and sex of animals and otherwise, as may be prescribed by the order.

An order under this section shall not authorize the killing of any animal mentioned in the First Schedule.

The provisions of this Ordinance with respect to holders of licenses shall not apply to a member of a tribe or native inhabitant of a village to which an order under this section applies.

Save as aforesaid, the general provisions of this Ordinance shall apply to every native who is authorized under this section, and a breach of any order shall be a breach of this Ordinance.

35. The collector of a district may, with the approval of the Commissioner, grant a license, similar to a sportsman's or settler's license to any native, upon such terms as to fees and other conditions as the Commissioner may direct.

36. (1) A Sub-Commissioner may with the approval of the Commissioner grant to any native chief a license to kill two bull elephants.

(2) Such license shall be subject to the conditions applicable to licenses issued under this Ordinance, and the fee in respect thereof shall be 150 rupees.

(3) The ivory obtained from elephants killed under any such license shall be taken to the nearest Government station, and there marked in such a way that it may be identified. Any person possessing, buying, or selling any such ivory which has not been so marked shall be guilty of an offence against this Ordinance.

(4) The Commissioner may make rules as to the persons by whom and the manner in which such ivory shall be marked.

37. (1) When elephants are found doing damage to shambas, and the owner or occupier thereof cannot, with the means at his disposal, drive them off, the nearest chief may at the request of such occupier, kill not more than two of such elephants.

(2) The destruction of the elephants shall be reported forthwith to the nearest civil officer, and the ivory shall be taken and handed over to him. The chief and

ne owner of the shamba shall each be entitled to receive such proportion of ne ivory as the Commissioner may direct. The carcases of the elephants shall elong to the owner of the shambas.

Legal Procedure.

38. Where any public officer of the Uganda Protectorate thinks it expedient or the purposes of verifying the register of a license holder, or suspects nat any person has been guilty of a breach of any of the provisions of this Ordinance or of the conditions of his license he may inspect and search, or uthorize any subordinate officer to inspect and search, any baggage, packages, aggons, tents, building, or caravan belonging to or under the control of such erson or his agent, and if the officer finds any heads, horns, tusks, skins, eathers, or other remains of the animals appearing to have been killed, or ny live animals appearing to have been captured, in contravention of this Ordinance, he shall seize and take the same before a magistrate to be dealt with ccording to law.

39. Save as herein mentioned, any person who hunts, kills, or captures any nimals in contravention of this Ordinance, or otherwise commits any breach f the provisions of this Ordinance or of the conditions of his license shall, on onviction, be liable to a fine which may extend to 1,000 rupees, and, where the ffence relates to more animals than two, to a fine in respect of each animal hich may extend to 500 rupees and in either case to imprisonment of either ind which may extend to two months, with or without fine;

Provided that any person who shoots, kills, or captures or attempts to shoot, ill or capture birds in contravention of this Ordinance shall not be liable to fine of more than 100 rupees nor imprisonment of either kind exceeding ne month.

In all cases on conviction any ostrich eggs or any heads, horns, tusks, skins, r other remains of animals found in the possession of the offender or his agent, nd all live animals captured in contravention of this Ordinance shall be liable o forfeiture.

If the person convicted is the holder of a license his license may be revoked y the Court.

40. Where in any proceeding under this Ordinance any fine is imposed, the Court may award any sum or sums not exceeding half the total fine to any nformer or informers.

41. This Ordinance shall come into operation on the 1st day of November, 1906.

First Schedule.

Animals not to be hunted, killed or captured, by any person, except under pecial license.

1. Giraffe.
2. Zebra.
3. Wild ass.
4. Gnu (*Connochætes*). Any species.
5. Eland (*Taurotragus*).
6. Elephant (female or young).
7. Secretary bird.
8. Vulture (any species).

9. Owls (any species).
10. Whale-headed stork (*Balaeniceps rex*).
11. Saddle-billed stork (*Epphippiorhynous Senegalensis*).
12. Crowned crane (*Balearica*).
13. Okapi Jonstoni.
14. Buffalo (female).
15. Ostrich (female or young).
16. Speke's Tragelaphus (female).
17. Elephant (male with tusks under 11 lbs. weight).

Second Schedule.

Animals, the females of which are not to be hunted, killed, or captured, when accompanying their young, and the young of which are not to be captured except under special license.

1. Rhinoceros.
2. Chevrotain (*Dorcatherium*).
3. All antelopes or gazelles not mentioned in the First Schedule.

Third Schedule.

Animals, limited numbers of which may be killed or captured under a sportsman's or public officer's license.

Species.	Number allowed.
1. Elephant (male) (tusks of and above 11 lbs. weight) ..	2
2. Rhinoceros	2
3. Hippopotamus (except in the following districts in which they are not protected):—	10
1. The River Nile.	
2. The shores of the Victoria, the Albert, and Albert Edward Lakes.	
4. Antelopes and gazelles:—	
Class A—	
Oryx (*Gemsbuck* or *Beisa*)	2
Sable or roan (*Hippotragus*)	2
Kudu (*Strepsiceros*)	2
Bongo (*Boocercus Eurycerus Isaaci*)	1
Speke's Tragelaphus (male)	2
Impala (*Æpyceros*)	2
5. Colobus or other fur monkeys	2
6. Aard-varks (*Orycteropus*)	2
7. Aard-wolf (*Proteles*)	2
8. Ostrich (male only)	2
9. Marabou stork (*Leptoptilus*)	2
10. Egrets of each species	2
11. Antelopes or gazelles:—	
Class B—	
Any species other than those in Class A	10
12. Chevrotains	10
13. Chimpanzee	1
14. Buffalo (male)	2

Fourth Schedule.

Animals, limited numbers of which may be killed or captured under a settler's license.

Species.	Number allowed.
1. Hippopotamus (except in the following districts in which they are not protected):— 1. The River Nile. 2. The shores of the Victoria, the Albert, and Albert Edward Lakes.	10
2. The following antelopes and gazelles only:— (i) Grant's gazelle (ii) Thomson's gazelle (iii) Hartebeest (iv) Reedbuck (*Cervicapra*) (v) Duiker (*Cephalophus*) (vi) Klipspringer (*Oretragus*) (vii) Steinbuck (*Rhaphiceros*) (viii) Waterbuck (*Cobus*) (ix) Bushbuck (*Tragelaphus Roualeyni*)	Five animals in all in any calendar month, made up of animals of a single species or several; provided however that not more than 10 animals of any one species shall be killed during the period for which the license is available.

Fifth Schedule.

Birds which may be shot under a bird license (subject to the provisions as to close seasons).

Any bird which is not mentioned in any of the first four schedules.

Sixth Schedule.

Game Reserves.

[1] 1. An area bounded:—

(1) By the road, skirting the Budonga Forest, from Masindi to Butiaba.
(2) By the shore of the Albert Lake to the mouth of the River Waja.
(3) By the left bank of the River Waja from its mouth to Kerota.
(4) by the Kerota Masindi Road.

The aforesaid area shall be known as the Budonga Game Reserve.

[2] 2. An area bounded:—

(1) By the right bank of the River Mpanga from its mouth to its source.
(2) By a straight line drawn from the source of the Mpanga River to the source of the River Dukala (Wasa).
(3) By the left bank of the River Dukala (Wasa) to its junction with the Semliki.
(4) By the right bank of the River Semliki from the junction of the Dukala (Wasa) River to the Congo frontier, thence following the Congo Frontier

[1] Cancelled 1911, and an area to be called the Bunyoro Game Reserve substituted. This extends from some way N. of the Butiaba-Masindi road along the east shore of Lake Albert to Fajao on the Victoria Nile.

[2] Cancelled 1910. Two areas substituted; one from Lake George northwards between the Nsonge and Mpanga Rivers to the Nyamukisa River, the other between the Semliki River (N.) and the escarpment overlooking the Semliki Valley (S.).

to a point due west of the source of the River Mupuku (Mabuku) and then by a straight line to the source of the River Mupuku (Mabuku).

(5) By the left bank of the River Mupuku (Mabuku) to its mouth in Lake Ruisamba and thence by the northern shores of Lake Ruisamba to the mouth of the Mpanga.

The aforesaid area shall be known as the Toro Game Reserve.

GAME LAWS OF THE EGYPTIAN SUDAN.

THE PRESERVATION OF WILD ANIMALS ORDINANCE, 1908.

An Ordinance for the preservation of Wild Animals and Birds.

It is hereby enacted as follows :—

Short Title and Commencement.

1. This Ordinance may be cited as "The Preservation of Wild Animals Ordinance, 1908," and shall commence immediately.

Repeals.

2. The Preservation of Wild Animals Ordinance, 1903, is hereby repealed except in so far as it repeals former Ordinances.

Interpretation.

3. In this Ordinance unless there is something repugnant in the context :—

the words "hunt," "capture," "kill," and "injure" include respectively attempting or aiding to hunt, capture, kill and injure ;

the words "the licensing officer" denote any officer authorized by the Governor General to grant licenses thereunder ;

the word "notified" means notified in the "Sudan Gazette" ;

the words "this Ordinance" include any regulation or matter notified or prescribed under the provisions of this Ordinance and for the time being in force ;

the word "order" means order published in the "Sudan Gazette."

Classification of Animals and Birds.

4. (i.) For the purpose of this Ordinance, wild animals and birds are divided into four classes, hereinafter called respectively Class 1, Class 2, Class 3, and Class 4.

(ii.) Class 1, Class 2, and Class 3 shall comprise respectively such animals and birds as the Governor General shall from time to time prescribe by order, and Class 4 shall include all wild animals and birds not comprised in Classes 1, 2 and 3.

(iii.) Any such order may provide that any animal or bird shall be included in one class in one part of the Sudan and in another or other classes in another or other parts of the Sudan.

(iv.) The Governor General may at any time by order remove any animal or bird from any class or include any animal or bird in any class.

Certain Animals and Birds Absolutely Protected.

5. (i.) No person other than a native of the Sudan, whether the holder of a license or not, shall kill, injure or capture any animal or bird included in Class 1,

provided that it shall be lawful to hunt and capture ostriches for the purpose of ostrich farming but not otherwise.

PENALTIES.

(ii.) Any person killing, injuring or capturing any animal or bird in contravention of this section shall be liable to a fine not exceeding £E 100, or to imprisonment for a period not exceeding three months.

ISSUE AND PROVISIONS OF LICENSES.

6. (i.) Licenses for the hunting, capturing and killing of wild animals and birds included in Class 2 and Class 3 respectively may be granted by the licensing officer in his discretion to any person applying for the same. Such licenses shall be of two kinds called respectively license A and license B.

(ii.) No person other than a native of the Sudan shall hunt, capture or kill any animal or bird included in Class 2, unless he is the holder of a license A.

(iii.) No person other than a native of the Sudan shall hunt, capture or kill any animal or bird included in Class 3, unless he is the holder either of a license A or of a license B.

(iv.) The Governor General may from time to time by order prescribe the terms and conditions upon which licenses A and B may be issued, and the periods for which they shall remain in force, and the fees which shall be payable in respect of them, and the numbers of animals and birds of each species comprised in Classes 2 and 3 respectively which may be killed or captured by the holders of licenses A and B during the currency thereof, and the additional fees, if any, which shall be paid by the holders of licenses in respect of each specimen of any species captured or killed by him under his license.

(v.) Except as provided in sub-sections (vi.) and (ix.) of this section, no license A or B shall be issued so as to run concurrently with any license previously issued to the same license-holder.

(vi.) The acceptance of a license A or B shall be held to constitute an agreement by the holder thereof that he agrees to conform to the provisions of this Ordinance. No license shall be transferable. If an original license be lost or destroyed, a duplicate license may be obtained, on proof of such loss or destruction, and payment to the licensing officer of a fee of Pt. 25.

(vii.) Huntsmen, beaters and other assistants bearing fire-arms for the personal use of the holder of the license A or a license B or otherwise aiding him to hunt, capture or kill any animal or bird, which such license-holder is authorized by his license to hunt, capture or kill shall be covered while so acting by such license, but this sub-section shall not be taken to authorize any huntsman, beater or other assistant, who is not personally the holder of a license in this behalf, to use any fire-arm in the pursuit of any animal or bird.

RENDERING ACCOUNT OF ANIMALS KILLED.

(viii.) Every holder of a license A or a license B shall keep an account of all animals and birds captured or killed by him of any species included in Class 2 or Class 3 and of any other species mentioned in his license. This account shall give the date and place of capture or killing of each animal or bird captured or killed and the sex of each such animal. Every such license-holder shall

produce such account together with his license whenever called upon to do so by any official of the Sudan Government, and shall deliver a copy of such account signed by himself to the licensing officer upon the expiration of his license or before his departure from the Sudan, whichever first happens, as also if required by the licensing officer upon such other day as may be specified in the license or at such other time or times and in such manner as may be notified or as the licensing officer may require.

Substitution of License A for License B.

(ix.) At any time, while a license B continues in force, it may with the leave of the licensing officer be exchanged for a license A on payment of the difference between the fees chargeable for such licenses respectively, but the substituted license shall expire upon the day when the original license would have expired.

Penalties.

(x.) Any person hunting, killing, capturing or injuring any wild animal or bird in contravention of sub-sections (ii.) or (iii.) of this section, or of any order made under this section, or of the conditions of any license issued to him, or abetting the use of fire-arms in the pursuit of any animal or bird by the natives of the Sudan or other persons who are not the holders of licenses issued under this Ordinance, or refusing to produce his license or such account as aforesaid when called upon to do so, or omitting to deliver a copy of such account in such manner and at such time as he ought to do under the provisions of "subsection (viii.) hereof," or producing an inaccurate account or copy of account shall be liable to a fine not exceeding £E 100, or to imprisonment for a term not exceeding three months.

Exceptions.

7. Notwithstanding anything in this Ordinance contained, the owner or occupier of any cultivated land, or any person authorized by him may capture, injure or kill any wild animal or bird causing serious damage to his property, if such damage cannot otherwise be averted; and notwithstanding anything in this Ordinance contained, no person shall be deemed to have committed an offence under this Ordinance by reason of his having killed or injured any animal in defence of himself or any other person.

Class IV.

8. Any person may hunt, capture and kill any of the birds and animals included in Class 4.

Rights of Natives of the Sudan.

9. (i.) Licenses for the hunting, capturing or killing of a specified number of animals and birds included in Class 1 may be issued in special cases to natives of the Sudan only. Each such license shall be issued only with the approval of the Governor General and shall be known as license C. The fee payable in respect of a license C shall be decided by the Governor of the province in which it is issued.

(ii.) No native of the Sudan not being a holder of a license C shall hunt, kill or capture any animal or bird included in Class 1, provided that it shall be lawful

for natives of the Sudan to hunt and capture ostriches for the purpose of ostrich farming but not otherwise.

(iii.) No native of the Sudan shall, except with the written permission of the Governor of the province, employ any fire-arm in the pursuit of any animal or bird included in Class 1, or Class 2, or Class 3, whether such native shall be the holder of a license C or not.

Provided nevertheless that a native may for the purpose mentioned in section 7 of this Ordinance use a licensed fire-arm or one lent him in accordance with section 14 of the Arms Ordinance, 1907.

(iv.) Subject to the above restrictions any native of the Sudan may hunt, kill or capture any wild animal or bird.

(v.) Any native of the Sudan acting in contravention of sub-section (ii.) or (iii.) of this section shall be liable to a fine not exceeding £E 10 or to imprisonment for a period not exceeding three months.

(vi.) Any native of the Sudan who is found in possession of any animal or bird included in Class 1, living or dead, or of any part of such animal or bird shall be deemed to have killed or captured such animal, unless the contrary be shown.

Sale of Hides, Horns, etc., of certain Animals.

10. (i.) The Governor General may from time to time by order prohibit in the Sudan or any part of the Sudan the sale and purchase of the hides, horns or flesh or any trophies of any of the animals or birds specified in such order.

(ii.) No person shall expose or offer for sale or collect or keep for trade purposes any such hides, horns, flesh or other trophies.

(iii.) Any person acting in contravention of this section shall be liable to a fine exceeding £E 10 or to imprisonment for a period not exceeding three months; and all such hides, horns and trophies so purchased or sold or offered for sale or collected for trade purposes shall be liable to confiscation.

(iv.) Any person found in possession of such hides, horns, flesh or trophies shall be deemed to have collected the same for trade purposes, unless the contrary is shown.

Duties on Hides permitted to be sold.

11. (i.) The sale and purchase of hides, horns, flesh or other trophies of wild animals and birds other than those mentioned in any order made under sub-section (i.) of section 10 of this Ordinance are permitted in the Sudan.

(ii.) Such ad valorem duties as the Governor General shall from time to time prescribe by order shall be paid in respect of any such hides, horns, flesh or other trophies brought into the principal town or village of any province or merkaz for purposes of trade or exported from the Sudan.

(iii.) All such hides, horns, flesh and trophies brought into any such town or village as aforesaid shall be deemed to be brought there for the purposes of trade, unless the contrary be shown.

(iv.) The said duty shall only be paid once in respect of each article, and every official receiving payment of such duty, shall if required give to the person making such payment a pass, which shall authorize him to take the article in respect of which duty has been paid into any other place without paying any further duty.

(v.) The holder of a license issued hereunder shall nevertheless be liable for

the said duties in respect of the export of hides, horns or other trophies obtained by him under his license, and any traveller leaving the country will be permitted to take with him free of the said duties not more than five in number of such hides, horns or other trophies upon making a declaration, if demanded, that they are not so taken for trade purposes.

(vi.) So long as elephant tusks, rhinoceros horn and ostrich feathers remain subject to royalty, they shall remain free from the payment of any duty under this section or any order made under this section.

Penalties.

(vii.) Any person failing to pay or attempting to evade the duty imposed by any order under this section upon any hides, horns, flesh, or other trophies, shall be liable to a fine not exceeding three times the amount of the duty, and the said hides, horns, flesh or other trophies shall be liable to confiscation.

Export Tax on Living Animals.

12. (i.) An export tax, at such rate as the Governor General shall from time to time by order prescribe, shall be levied on each living specimen exported from the Sudan of any animal or bird specified in such order.

(ii.) The said export tax shall not be levied in respect of animals or birds exported by the holder of a license issued hereunder in accordance with the terms of such license.

(iii.) Any person failing to pay or attempting to evade the duty imposed by this section on any animal or bird shall be liable to a fine not exceeding three times the amount of the duty, and the said animal or bird shall be liable to confiscation.

Sanctuaries and Reserves.

13. (i.) A sanctuary or sanctuaries for game shall from time to time be constituted by order comprising such district or districts as shall be specified in the order.

No person shall hunt, capture or kill any animal or bird for the time being included in Classes 2 and 3 in any sanctuary so constituted, except natives of the Sudan residing in the same sanctuary and holders of A or B licenses issued under the Ordinance, who are officers or officials of the Sudan Government or of the British or Egyptian Governments or Armies and who are stationed in the same sanctuary and to whom special permits for that purpose shall have been granted by the superintendent, Game Preservation Department.

(ii.) A reserve or reserves shall from time to time be constituted by order comprising such district or districts as shall be specified in the order.

No person shall hunt, capture or kill any animal or bird for the time being included in Classes 2 and 3 in any reserve so constituted, except natives of the Sudan residing in the same reserve and holders of A or B licenses issued under this Ordinance to whom special permits for that purpose shall have been issued by the superintendent, Game Preservation Department, and who are either persons residing in the same reserve or are officers or officials of the Sudan Government or are officers or officials of the British or Egyptian Governments or Armies and are serving in the Sudan.

(iii.) The Governor General may from time to time prescribe the periods for

which and the conditions subject to which such special permits as aforesaid may be granted by the superintendent, Game Preservation Department, to such license holders as above mentioned.

PENALTIES.

(iv.) Any person who shall hunt, capture or kill any wild animal or bird in any district hereafter by order constituted a sanctuary or reserve, contrary to the provisions of this section, or of any order made by the Governor General under this section, or contrary to the conditions of any special permit which may have been granted to him, or otherwise acts in contravention of this section, or any such order as aforesaid, or the conditions of any such special permit as aforesaid shall be liable to a fine not exceeding £E 100, or to imprisonment for a term not exceeding three months.

LOCAL EXTENT OF LICENSES.

14. Subject to the provisions of the last preceding section every license A or license B shall be valid throughout the Sudan, save that no license shall be valid in any part of the Sudan to which under any Ordinance or regulations for the time being in force it is unlawful for the license holder to proceed, and that no license shall be valid in any part of the Sudan to proceed to which special permission is required, unless endorsed to that effect by the authority by which such permission is granted.

OSTRICH EGGS NOT TO BE REMOVED.

15. (i.) No person, whether he is the holder of a license or not shall, without the written permission of a licensing officer, remove or disturb or injure the eggs of an ostrich or of any other bird which may from time to time be mentioned in any order made for that purpose.

SHOOTING FROM A STEAMER FORBIDDEN.

(ii.) No person shall shoot from a steamer either at rest or in motion or from any barge or boat attached to a steamer, at any bird or at any animal, except the lion, leopard and crocodile, and, in the Bahr el Ghazal and its tributaries only, the hippopotamus.

POISON AND EXPLOSIVES NOT TO BE USED ON FISH.

(iii.) No person shall use any poison or dynamite or any other explosive for the taking of any fish.

PENALTIES.

(iv.) Any person acting in contravention of this section shall be liable to a fine not exceeding £E 5, or in default of payment to imprisonment for a term not exceeding one month.

SPECIAL LICENSES FOR SCIENTIFIC PURPOSES.

16. (i.) The Governor General or any officer authorized by him may by special endorsement on a license permit the capture of a stated number of animals and birds included in Class 1.

(ii.) The Governor General may dispense from the observance of such sections

of this Ordinance as he thinks proper, except sub-section 1 of section 13, any person who requires such dispensation for the purpose of scientific study.

(iii.) Any permission or dispensation given hereunder may be withdrawn at any time.

Confiscating of Cow and Small Ivory.

17. All elephant tusks weighing less than 10 lbs. or such other weight as may be notified from time to time and all cow ivory are liable to be confiscated.

Powers of Governor General and Governors of Provinces.

18. (i.) The Governor General may from time to time by order or orders exercise all or any of the following powers (that is to say) :—

(*a*) prescribe or do any matter or thing which is left by this Ordinance to be prescribed or done;

(*b*) declare a close time or close times during which any wild animal or bird specified in such order shall not be hunted, captured or killed nor the flesh thereof sold or offered for sale;

(*c*) forbid or restrict the use of nets, pitfalls or other destructive modes of capture;

(*d*) extend or limit any of the provisions of this Ordinance so as to include therein or exclude therefrom any wild animal or bird specified in such order;

(*e*) revoke, alter or suspend any such orders.

(ii.) Governors of provinces may by public notice forbid or restrict the use within their respective provinces of nets, pitfalls or other destructive modes of capture, and revoke, alter or suspend any such notice.

(iii.) Upon the publication of any such order or notice this Ordinance and any such order or notice shall take effect as if the matter contained in such order or notice had been incorporated in this Ordinance.

Fees Payable by Persons Contravening.

19. Persons contravening this Ordinance by hunting, capturing or killing any wild animal or bird included in Class 2 or Class 3 without a license or with an insufficient license shall be liable for all the fees which would have been payable by them for the taking out of a sufficient license for the hunting, capturing or killing of such animal or bird in addition to any fine or imprisonment which may be awarded for such contravention.

Court for trying Offences.

20. Offences against any of the provisions of this Ordinance may be tried by the court of a magistrate of the second class under the Code of Criminal Procedure or by any higher Court and either summarily or otherwise.

Forfeiture of Licenses.

21. The license of any person convicted of any offence under this Ordinance shall be liable to be forfeited by the order of a licensing officer.

Confiscation of Trophies, etc.

22. (i.) All animals and birds and all hides, skins, horns, tusks, feathers, trophies,

ggs, flesh and carcases of any animal or bird captured, killed, taken, sold, urchased, exposed or offered for sale or collected or kept for sale in contraven-ion of this Ordinance shall be liable to confiscation.

(ii.) Anything which under this or any other section of this Ordinance is liable o confiscation may be seized by or by order of the superintendent of the Game reservation Department or any magistrate under the Code of Criminal Pro-edure or any commissioned officer of the British or Egyptian Armies who is in ommand of any police, post, station or patrol or an inspector or assessor of Customs or any officer or official in charge of a Customs station without any djudication.

(iii.) Any person aggrieved by any such confiscation may appeal against it to he court of a magistrate of the first or second class under the Code of Criminal rocedure.

The hearing of such an appeal shall be regarded as a proceeding under the ode of Criminal Procedure, and notwithstanding that the judgment of the court loes not contain any sentence of imprisonment for a term exceeding two months here shall be a right of appeal from it in the same cases and manner as here is from the judgment of similar courts in ordinary criminal proceedings nder the same code.

CAIRO, October 20th, 1908. (Signed) REGINALD WINGATE, *Governor General.*

ORDER

ISSUED UNDER THE PRESERVATION OF WILD ANIMALS ORDINANCE, 1908.

In exercise of the powers conferred upon me by sections 4, 6, 10, 11, 12 and 3 of the above mentioned Ordinance and of every other power enabling me in his behalf, I, Lieutenant-General Sir Francis Reginald Wingate, K.C.B., K.C.M.G., .S.O., Governor General of the Sudan, do HEREBY ORDER AND PRESCRIBE as ollows:—

1. In this order the term "the Ordinance" means the Preservation of Wild nimals Ordinance, 1908.

2. (*See section 4 of the Ordinance*).

For the purposes of the Ordinance the Classes 1, 2 and 3 mentioned in section shall include respectively the several species of animals and birds respectively nentioned in Parts I., II. and III. of the First Schedule hereto subject as to lass 1 to the provisions in favour of ostrich farming contained in sections and 9 of the Ordinance, and provided that rhinoceros shall be included in lass 1 in the provinces of Kassala and Sennar and therefore may not be unted, captured or killed in those provinces but shall be included in Class 2 in he rest of the Sudan and therefore may be hunted, captured or killed to the xtent specified in the next paragraph of this order and in Part II. of the said irst Schedule.

3. (*See section 6 of the Ordinance*).

The number of animals or birds of any species included in Classes 2 and 3 hich a license holder may capture or kill during the currency of one license hall be those respectively mentioned with regard to each such species in arts II. and III. of the First Schedule hereto.

4. (*See section 6 of the Ordinance*).

The fees payable in respect of licenses A and B issued under the above mentioned Ordinance shall be:—

For an "A" license £E 50
For a "B" license £E 5

except when issued to an officer or official of the Sudan Government or of the British or Egyptian Governments or Armies provided such officer or official be serving in the Sudan or in Egypt, and subject to my approval in each case to a person ordinarily resident in the Sudan or intending to reside there, in which cases the fees shall be:—

For license "A" £E 6
For license "B" £E 1

and except also that the licensing officer may at his discretion issue to any person a temporary license B for one or more consecutive days not exceeding four at the rate of Pt. 25 for each day: provided always that every holder of a license A issued at the £E 6 rate shall pay to the superintendent of Game Preservation Department an additional fee of £E 10 for every elephant killed or captured by him under such license: provided also that every holder of license A issued at either rate shall pay to the licensing officer an additional fee of £E 20 for every giraffe killed or captured by him under such license. Every holder of license A shall report in writing to the superintendent of Game Preservation Department, Khartoum, at the first opportunity the killing or capture of any animal in respect of which he is hereby required to pay an additional fee as aforesaid and shall either pay the amount of such fee into some Government Chest to the credit of the Game Preservation Department and inform the superintendent of Game Preservation Department of the number and date of the order by which he paid it in and the place where the payment was made or transmit the amount of the fee to the superintendent, Game Preservation Department with the report.

5. (*See section* 6 *of the Ordinance*).

Every license shall be valid for the period of one year from the date of issue thereof except in the case of a temporary license which shall be valid for the particular days therein specified.

6. (*See section* 10 *of the Ordinance*).

The sale and purchase of the hides, horns, or flesh, or of any trophies of any of the animals and birds specified in the first part of the Second Schedule hereto is absolutely prohibited throughout the Sudan.

The sale and purchase of the hides, or horns, or flesh, or of any trophies of the animals specified in the second part of the Second Schedule hereto is prohibited in those parts of the Sudan which are specified in the second part of the same schedule.

7. (*See section* 11 *of the Ordinance*).

Subject to the exemption contained in sub-section 5 of section 11 of the Ordinance in favour of the holders of licenses issued under the Ordinance and to the exceptions contained in sub-section 6 of the same section an ad valorem duty of 20% shall be paid on elephant hides and hippopotamus hides and an ad valorem duty of 10% shall be paid on all other hides, horns, flesh, or trophies of any animal or bird included in Class 1, 2 and 3 which may be lawfully sold.

This duty shall be paid at the time and place provided by section 11 of the

Ordinance. This duty is in addition to any Customs duties which may at any time be payable on the export of any such things from the Sudan and to any royalties which may under any Ordinance for the time being be leviable on any such things.

Export Tax on Live Animals, etc.

8. (*See section 12 of the Ordinance*).

An export tax shall be levied upon each living specimen exported from the Sudan of each species of animal or bird mentioned in the Third Schedule hereto at the rate specified for each species in the same schedule.

Sanctuary.

9. (*See section 13 of the Ordinance*).

The district hereinafter described is hereby constituted a sanctuary for game under the provisions of section 13 of the Ordinance, namely :—

The district bounded on the north by a line drawn from Kaka on the White Nile to Famaka on the Blue Nile, on the east by the Blue Nile from Famaka to the Abyssinian Frontier and then by the boundary with Abyssinia to the Baro River, on the south by the Baro River to its junction with the Sobat River and then by the Sobat River to its junction with the White Nile, and on the west by the main channel of the White Nile.

Reserve.

(ii.) The district hereinafter described is hereby constituted a reserve for game under the provisions of section 13 of the Ordinance, namely :—

The district bounded on the north by a line drawn from Jebelein on the White Nile to Karkoj on the Blue Nile, on the east by the Blue Nile between Karkoj and Famaka, on the south by a line drawn from Famaka to Kaka, and on the west by the main channel of the White Nile between Kaka and Jebelein.

10. (*See section 13 of the Ordinance*).

A special permit issued to any holder of a license A or B authorizing him to hunt, capture, or kill wild animals or birds in the reserve shall (except in the case of a person residing in the reserve or of any officer or official stationed in the reserve) be valid for a period not exceeding 30 days to be specified in such permit.

A special permit authorizing the holder thereof to hunt, capture, or kill wild animals or birds either in the sanctuary or in the reserve shall not be issued to the holder of a temporary license B.

THE FIRST SCHEDULE.

Part I.

Class 1. Animals and birds which may not be hunted, captured or killed.

Wild ass	Shoe Bill (*Balaeniceps*)
Zebra	Ground Horn Bill (*Bucorax*)
Ostrich	Secretary Bird (*Serpentarius*)

and (in Kassala and Sennar Provinces only) Rhinoceros.

Ostriches may be hunted and captured, but not killed, for the purpose of ostrich farming but not otherwise.

Part II.

Class 2. Animals and birds a limited number of which may be captured or killed by the holder of an A license and the number of each species which may be captured or killed.

Giraffe (subject to the payment of an additional fee of £E 20)	1
Rhinoceros (except in Kassala and Sennar Provinces, in which rhinoceros may not be killed or captured)	1
Mrs. Gray's Water Buck (*Cobus Maria*)	1
Eland (*Taurotragus*)	1
Kudu (*Strepsiceros*)	1
Oryx Beisa	1
Elephant (subject as regards holders of licenses A issued under the £E 6 rate to the payment of an additional fee of £E 10 for each elephant)	2
Buffalo	3
Water buck (*Cobus Defassa*) [but not more than 2 of these may be captured or killed in Kassala and Sennar Provinces and on the White Nile north of Kodok]	4
Roan antelope (*Hippotragus*) [but not more than 2 of these may be killed or captured in Kassala and Sennar Provinces and on the White Nile north of Kodok]	4
Bush buck (*Tragelaphus*)	4
Tora hartebeest (*Bubalis Tora*)	4
Oryx Leucoryx	4
White-eared cob (*Cobus Leucotis*)	4
Uganda cob (*Cobus Thomasi*)	6
Addax	6
Addra gazelle (*Gazella Ruficollis*)	6
Reed buck (*Cervicapra*) [but not more than 4 of these may be captured or killed elsewhere than in Kassala and Sennar Provinces]	8
Jackson's hartebeest (*Bubalis Jacksoni*) [but not more than 4 of these may be captured or killed elsewhere than in the Bahr el Ghazal Province]	12

Part III.

Class 3. Animals and birds a limited number of which may be captured or killed by the holder of an A license or a B license and the number of each species which may be captured or killed:—

Klipspringer	1
Hippopotamus [but there is no limit to the number of hippopotamus which may be captured or killed south of Kodok or south of Sennar]	4
Ibex [but more than 2 of these may be captured or killed south of Suakin]	4
Wild sheep	2
Pelican	2
Egret	2
Herons	2

Storks	2
Marabous	2
Spoonbills	2
Flamingoes	2
Ibis	2
Crowned crane	6
*Warthog	6
*Tiang	6
*Large bustard	12
Other antelope and gazelles not before specified in this schedule, of each species	11

THE SECOND SCHEDULE.

PART I.

Animals and birds in respect of which the sale and purchase of the hides, horns, flesh or trophies is absolutely prohibited throughout the Sudan.

All animals and birds for the time being included in Class 1, and

Mrs. Gray's water buck	Water buck
White-eared cob	All other species of cob
Kudu	Roan antelope
Jackson's hartebeest	Tora hartebeest
Oryx Leucoryx	Oryx Beisa
Ibex	Eland
Giraffe	

PART II.

Animals in respect of which the sale and purchase of the hides, horns, flesh or trophies is prohibited in certain parts only of the Sudan.

Name of animal.	Districts in which the prohibition is in force.
Rhinoceros Reed buck Ariel	Kassala and Sennar Provinces

THE THIRD SCHEDULE.

EXPORT TAX ON LIVING ANIMALS:

Each £E 24.

Elephant	Rhinoceros
Giraffe	

* *A license holder on a trip of more than three months' duration may shoot four more of each of these for food in every additional month after the first three.*

Each £E 10.

Buffalo	Jackson's hartebeest
Wild ass	Tora hartebeest
Zebra	Roan antelope
Water buck	Oryx Leucoryx
Mrs. Gray's water buck	Oryx Beisa
Uganda cob	Addax
White-eared cob	Kudu
Eland	

Each £E 5.

Addra gazelle	Wild sheep
Ibex	Balaeniceps
Hippopotamus	

Each £E 2.

Ostrich	Secretary bird

Each £E 1.

Lion	Leopard
Cheetah	

ORDER ISSUED UNDER THE PRESERVATION OF WILD ANIMALS ORDINANCE, 1908.

Whereas it is advisable to afford greater protection in certain parts of the Red Sea Province to the Nubian ibex,

Now, therefore, in exercise of the powers conferred upon me by sections 13 and 18 of the Preservation of Wild Animals Ordinance, 1908, and of every other power enabling me in this behalf, I, Lieutenant-General Sir Francis Reginald Wingate, K.C.B., K.C.M.G., D.S.O., Governor General of the Sudan, do hereby order and prescribe that the mountains of Karbush, Erba, Arbat and Asotriba in the Red Sea Province and the areas respectively surrounding the aforesaid mountains for a distance of five miles from their several bases be, and the same are hereby constituted, sanctuaries, limited nevertheless to the protection of ibex only and not of other animals or birds, and no person shall hunt, capture or kill any ibex in any of the areas above mentioned, except in accordance with the provisions of section 13 of the said Ordinance.

(Signed) REGINALD WINGATE,
Governor General.

KHARTOUM,
December 23rd, 1908.

CLOSED DISTRICTS.

(*Extract from the Sudan Gazette, No. 143, October 8th, 1908.*)

Until further notice the following districts are closed to persons travelling for sport or pleasure :—

(*a*) The province of Kordofan south of a line connecting Sherkeila, Rahad Abu Haraz, Abu Zabbut, Nahud, and El Odaiya.

(*b*) The Bahr el Ghazal Province.

(*c*) The districts south and west of a line drawn from Naseer on the Sobat to Fading on the Khor Filus, thence to the mouth of the Zeraf River (which the

steamers and boats of private parties may not enter), and thence to the western end of Lake No.

Except that sportsmen and pleasure parties using a steamer or boat as a base may land on either bank of the Upper Nile north of Shambe, and on the east bank south of Shambe as far as the boundary of Uganda, provided that they do not proceed more than a day's march inland from the river.

GAME LAWS OF SOMALILAND.

NOTICE.

The following Ordinance, made by His Majesty's Commissioner for the Somaliland Protectorate, is published for general information.

(Signed) H. A. BYATT,
Secretary to Administration.

BERBERA, July 10th, 1907.

SOMALILAND PROTECTORATE.

AN ORDINANCE

Enacted for His Majesty's Commissioner for the Somaliland Protectorate.

(Signed) H. E. S. CORDEAUX,
His Majesty's Commissioner.

BERBERA, June 12th, 1907.

No. 2 OF 1907.

Game Preservation.

1. In this Ordinance:—

"Hunt," "kill," or "capture" means hunting, killing, or capturing by any method and includes every attempt to kill or capture.

"Hunting" includes molesting.

"Game" means any animal mentioned in any of the schedules.

"Public officer" means a European officer in the public service of the Somaliland Protectorate, or an officer of one of His Majesty's ships visiting the coast.

"Native" means any native of Africa, not being of European or American race or parentage.

"Settler" means a person for the time being resident in the Protectorate, not being a public officer or a native.

"Sportsman" means a person who visits the Protectorate wholly or partly for sporting purposes, not being a public officer, settler or native.

"District officer" means the administrative officer in charge of a district of the Protectorate.

"Schedule" and "schedules" refer to the schedules annexed to this Ordinance.

General Provisions.

2. No person, unless he is authorized by a special license in that behalf, shall hunt, kill, or capture any of the animals mentioned in the First Schedule.

3. No person, unless he is authorized by a special license under this Ordinance shall hunt, kill, or capture any animal of the kinds mentioned in the Second Schedule, if the animal be :—

(*a*) Immature; or

(*b*) A female accompanied by its young.

4. No person, unless he is authorized under this Ordinance, shall hunt, kill, or capture any animal mentioned in the Third Schedule.

5. The Commissioner may, if he thinks fit, by Proclamation, declare that the name of any species, variety, or sex of animal, whether beast or bird, not mentioned in any schedule hereto, shall be added to a particular schedule, or that the name of any species or variety of animal mentioned or included in one schedule shall be transferred to another schedule, and, if he thinks fit apply such declaration to the whole of the Protectorate, or restrict it to any district or districts in which he thinks it expedient that the animal should be protected.

6. No person shall within the Protectorate, sell, or purchase, or offer, or expose for sale any ostrich eggs, or any head, horns, skin, or flesh of any animal mentioned in any of the schedules, unless the ostrich or animal has been kept in a domesticated state; and no person shall knowingly store, pack, convey, or export any part of any animal which he has reason to believe has been killed or captured in contravention of this Ordinance.

7. If any person is found to be in possession of any elephant's tusk weighing less than 25 lbs., or any ivory being, in the opinion of the Court, part of an elephant's tusk which would have weighed less than 25 lbs., he shall be guilty of an offence against this Ordinance, and the tusk or ivory shall be forfeited unless he proves that the tusk or ivory was not obtained in breach of this Ordinance.

8. Where it appears to the Commissioner that any method used for killing or capturing animals is unduly destructive, he may, by Proclamation, prohibit such method, or prescribe the conditions, under which any method may be used; and if any person uses any method so prohibited, or uses any method otherwise than according to the conditions so prescribed, he shall be liable to the same penalties as for a breach of this Ordinance.

9. Save as provided by this Ordinance, or by any Proclamation under this Ordinance, any person may hunt, kill, or capture any animal not mentioned in any of the schedules.

Game Reserves.

10. The areas described in the Fifth Schedule hereto are hereby declared to be game reserves.

The Commissioner, with the approval of the Secretary of State, may, by Proclamation, declare any other portion of the Protectorate to be a game reserve and may define or alter the limits of any game reserve, and this Ordinance shall apply to any such game reserve.

Save as provided in this Ordinance, or by any such Proclamation, any person who, unless he is authorized by a special license, hunts, kills, or captures any animal whatever in a game reserve, or is found within a game reserve under circumstances showing that he was unlawfully in pursuit of any animal, shall be guilty of a breach of this Ordinance.

11. There shall be an annual close time for game in the Protectorate, from March 15th to June 15th, both days inclusive, during which, notwithstanding any authorization conferred on license-holders under this Ordinance, no game animals mentioned in the four schedules annexed to this Ordinance shall be hunted, killed, or captured.

Licenses to Europeans, etc.

12. The following licenses may be granted by the Commissioner, or any district officer or such person or persons as may be authorized by the Commissioner, that is to say :—

(1) A sportsman's license;

(2) A public officer's license; and

(3) A settler's license.

The following fees shall be payable for licenses, that is to say, for a sportsman's license 500 rupees, and for a public officer's or a settler's license, 100 rupees.

Every license shall be in force for one year only from the date of issue.

Provided that a public officer's license may be granted for a single period of 14 consecutive days in one year on payment of a fee of 30 rupees.

Every license shall bear in full the name of the person to whom it is granted, the date of issue, the period of its duration, and the signature of the Commissioner, district officer or other person authorized to grant licenses.

The applicant for a license may be required to give security by bond or deposit, not exceeding 2,000 rupees, for his compliance with this Ordinance, and with the additional conditions (if any) contained in his license.

A license is not transferable.

Every license must be produced when called for by any officer of the Protectorate Government.

In granting licenses under this Ordinance a district officer or any person authorized to grant licenses shall observe any general or particular instructions of the Commissioner.

13. A sportsman's license and a public officer's license respectively authorize the holder to hunt, kill, or capture animals of any of the species mentioned in the Third Schedule, but unless the license otherwise provides, not more than the number of each species fixed by the second column of that Schedule.

The holder of a sportsman's or public officer's license granted under this Ordinance may by the license be authorized to kill or capture additional animals of any such species on payment of such additional fees as may be prescribed by the Commissioner.

14. A settler's license authorizes the holder to hunt, kill, or capture animals of the species and to the number mentioned in the Fourth Schedule only.

15. A public officer's license shall not be granted except to a public officer, save that the Commissioner may issue a limited number of public officer's licenses to military officers of the Aden Garrison. A settler's license shall not be granted except to a settler, but a sportsman's license may be granted to a settler.

16. Where it appears proper to the Commissioner for scientific or administrative reasons, he may grant a special license to any person, not being a native, to kill or capture animals of any one or more species mentioned in any of the schedules, or to kill, hunt, or capture in a game reserve specified beasts or birds

of prey, or other animals whose presence is detrimental to the purposes of the game reserve, or in particular cases, to kill or capture, as the case may be, in a game reserve, an animal or animals of any one or more species mentioned in the schedules.

A special license shall be subject to such conditions as to fees and security (if any), number, sex, and age of specimens, district and season for hunting and other matters as the Commissioner may prescribe.

Save as aforesaid, the holder of a special license shall be subject to the general provisions of this Ordinance, and to the provisions relating to holders of licenses.

17. Every license-holder shall keep a register of the animals killed or captured by him in the form specified in the Seventh Schedule.

The register shall be submitted as often as convenient, but not less frequently than once in three months, to the nearest district officer, who shall countersign the entries up to date.

Any person authorized to grant licenses may at any time call upon any license-holder to produce his register for inspection.

Every person holding a sportsman's license shall likewise before leaving the Protectorate submit his register to the district officer of the port from which he embarks.

If any holder of a license fails to keep his register truly he shall be guilty of an offence against this Ordinance.

18. The Commissioner may revoke any license when he is satisfied that the holder has been guilty of a breach of this Ordinance or of his license, or has connived with any other person in any such breach, or that in any matters in relation thereto he has acted otherwise than in good faith.

19. The Commissioner may at his discretion direct that a license under this Ordinance shall be refused to any applicant.

20. Any person whose license has been lost or destroyed may obtain a fresh license for the remainder of his term on payment of a fee not exceeding one-fifth of the fee paid for the license so lost or destroyed.

21. No license granted under this Ordinance shall entitle the holder to hunt, kill, or capture any animal, or to trespass upon private property without the consent of the owner or occupier.

22. Any person who, after having killed or captured animals to the number and of the species authorized by his license, proceeds to hunt, kill, or capture any animals which he is not authorized to kill or capture, shall be guilty of a breach of this Ordinance, and punishable accordingly.

23. Persons in the employment of holders of licenses may, without license, assist such holders of licenses in hunting animals, but shall not use fire-arms.

In any case of a breach of this Ordinance the license of every license-holder concerned in the breach shall be liable to forfeiture, and such license-holder shall be guilty of an offence.

24. The Commissioner or any person authorized by him in that behalf may, at his discretion, require any person importing fire-arms or ammunition that may be used by such person for the purpose of killing game or other animals to take out a license under this Ordinance, and may refuse to allow the fire-arms or ammunition to be taken from the public warehouse until such license is taken out. Save, as aforesaid, nothing in this Ordinance shall affect the provisions of "The Somaliland Fire-arms Regulations, 1905."

Restrictions on Killing Game by Natives.

25. Except as regards the animals mentioned in Schedule 1, and larger and lesser kudu, the killing of which by natives will be prohibited, the provisions of this Ordinance as to the killing of animals other than in the reserve will not for the present be applied to the inland tribes who have hitherto been accustomed to depend on the flesh of wild animals for their subsistence.

Legal Procedure.

26. Where any public officer of the Somaliland Protectorate thinks it expedient for the purpose of verifying the register of a license-holder, or suspects that any person has been guilty of a breach of this Ordinance, he may inspect and search, or authorize any subordinate officer to inspect and search, any baggage, packages, waggons, tents, building, or caravan belonging to or under the control of such person or his agent; and if the officer finds any heads, tusks, skins or other remains of animals appearing to have been killed, or any live animals appearing to have been captured, in contravention of this Ordinance, he shall seize and take the same before a magistrate to be dealt with according to law.

27. Any person who hunts, kills, or captures any animals in contravention of this Ordinance, or otherwise commits any breach of this Ordinance, shall, on conviction, be liable to a fine which may extend to 1,000 rupees, and, where the offence relates to more animals than two, to a fine in respect of each animal which may extend to 500 rupees, and in either case to imprisonment which may extend to two months, with or without a fine.

In all cases of conviction, any heads, horns, tusks, skins, or other remains of animals found in the possession of the offender or his agent, and all live animals captured in contravention of this Ordinance, shall be liable to forfeiture.

If the person convicted is the holder of a license, his license may be revoked by the Court.

28. Where in any proceeding under this Ordinance any fine is imposed, the Court may award any sum or sums not exceeding half the total fine to any informer or informers.

Repeal, etc.

29. All previous regulations as to the killing of game in the Protectorate are hereby repealed.

30. The forms of licenses appearing in the schedule hereto, with such modifications as circumstances require, may be used.

31. This Ordinance may be cited as "The Somaliland Game Preservation Ordinance, 1907."

SCHEDULES.*

First Schedule.

Animals not to be hunted, killed, or captured by any person except under special license:—

1. Zebra (all species).
2. Giraffe.

* These schedules may contain the names of species or varieties not found, or only occasionally found in Somaliland.

3. Eland.
4. Gnu.
5. Wild ass.
6. Buffalo.
7. Elephant.
8. Vultures.
9. Secretary birds.
10. Owls.
11. Ostrich (female and young).

Second Schedule.

Animals, the females of which are not to be hunted, killed, or captured when accompanied by their young, and the young of which are not to be captured except under special license:—

1. Rhinoceros.
2. All antelopes and gazelles.

Third Schedule.

Animals, limited numbers of which may be killed or captured under a sportsman's or public officer's license:—

Species.	Number allowed under license.
1. Rhinoceros	1
2. Antelopes and gazelles:—	
(i) Oryx	3
(ii) Greater kudu (*Strepsiceros*)	1
(iii) Lesser kudu (*Imberbis*)	1
(iv) Swayne's hartebeeste	1
(v) Clarke's gazelle	1
(vi) Klipspringer	2
(vii) Baira	2
(viii) Pelzeln's gazelle	2
(ix) Waller's gazelle	4
(x) Speke's gazelle	10
(xi) Soemering's gazelle	10
(xii) Dik dik (of each species)	15
3. Cheetah	2
4. Aard-wolf	2
5. Smaller monkeys (of each species)	2
6. Ostrich (males)	1
7. Marabous	2
8. Egrets	2
9. Greater bustards	2
10. Wild pig (of each species)	6
11. Smaller cats	10

FOURTH SCHEDULE.

Animals which may be killed under a settler's license:—

Species.	Number allowed under license.
1. Speke's gazelle	10
2. Somering's gazelle	10
3. Waller's gazelle	4
4. Dik dik	15
5. Wild pig (of each species)	6
6. Smaller cats	10

FIFTH SCHEDULE.

Game Reserves.

1. The area bounded by a line running from Geloker Hill through Lower Shaikh and the Shaikh's tomb to Fodyer Bluff, thence west along the crest of the Golis Range to Daraas Bluff, thence south through Armaleh to Garbardir Hill, thence east through Deimoleh-Yer Hill to Geloker Hill.

2. The area bounded by a line running from Lafarug through Mandeira and the Jerato Pass to Syk, Talawa-Yer and Hargeisa River to Haraf, thence to Sattawa at the intersection of the 10th parallel with the 44th east meridian, and thence along the 10th parallel to its starting point at Lafarug.

GAME LAWS OF BRITISH GAMBIA.

REGULATIONS UNDER SECTION III. OF "THE WILD ANIMALS, BIRDS AND FISH PRESERVATION ORDINANCE, 1901."

I. No person shall at any time hunt capture or kill any animal or bird mentioned in Schedule I. hereto.

II. From the 30th June in any year until the 1st of March next following, no person shall hunt, capture or kill any animal mentioned in Schedule II. hereto.

III. From the 30th June until the 31st of December in any year, no person shall hunt, capture or kill any bird mentioned in Schedule III. hereto.

IV. No person shall at any time take out of the nest or destroy in the nest the eggs of any bird mentioned in Schedule III. hereto.

V. No person shall at any time hunt, capture or kill any animal or bird mentioned in Schedules II. and III. hereto without having first obtained one of the following annual licences, viz.:—

Sportsman's (or No. I.), public officer's (or No. II.), trader's (or No. III.), or native's (or No. IV.).

VI. Licences shall be in the form set out in Schedule IV. hereto, and the following fees shall be payable therefor annually, viz.:—

No. I.	Sportsman's Licence	£5	0 0
No. II.	Public Officer's „	1	0 0
No. III.	Trader's „	1	0 0
No. IV.	Native's „	0	4 0

VII. All licences shall be annual and shall cease to be in force on the 1st of July next following the date of issue.

VIII. Licences shall be subject to the provisions of these regulations and of any other regulations for the time being in force; and these regulations shall be endorsed on the back of each licence.

IX. Sportsmen's and public officers' licences shall be issued annually by the Colonial Treasurer and shall be subject to the approval of the Governor. Traders' and natives' licences may be issued annually by the Colonial Treasurer or by any Travelling Commissioner.

X. If there be a doubt as to which licence should be granted to any person, such doubt shall be decided by the Governor whose decision shall be final.

XI. Every licence holder shall before the 31st of July in every year render to the Travelling Commissioner of the district in which the animals are captured or killed a return of all the animals mentioned in Schedule II. hereto which he has captured or killed since the previous last day of February.

For this purpose forms may be obtained at any time from the Colonial Treasurer or any Travelling Commissioner, and at least three forms shall be given with each certificate.

XII. Nothing in these Regulations shall prevent any person whose crops, cattle, lands or other property are being seriously injured by any animals or birds whatsoever from hunting, capturing or killing such animals or birds in order to prevent such injury; provided that the burden of proving that such serious injury is actually taking place shall always rest upon any person so hunting, capturing or killing any animal or bird, in contravention of these Regulations.

XIII. Any person contravening these Regulations shall be liable to a penalty not exceeding £25 for each offence or in default of payment to imprisonment with or without hard labour for a period not exceeding six months.

Schedule I.

Animals and Birds absolutely protected.

English.	*Latin.*	*Mandingo.*
Elephant	*Elephas africanus*	Sammo
Hippopotamus	*Hippopotamus amphibius*	Malo
Giraffe	*Giraffa camelopardalis peralta*	Tero
Congo Buffalo	*Bos caffer nanus*	Seo Wullengo
Senegambian Buffalo	*Bos caffer planiceros*	Seo Fingo
West African Eland	*Taurotragus derbianus*	Jinki-janko
Vulture		

Schedule II.

Animals protected from 30th June to the 1st of March next following.

English.	*Latin.*	*Mandingo.*
West African Hartebeest	*Bubalis major*	Tanghongo Koio
Korrigum Hartebeest	*Damaliscus corrigum typicus*	Tangkongo
Red-flanked Duiker	*Cephalophus rufilatus*	Kuntango
Maxwell's Duiker	*Cephalophus maxwelli*	Mankero
Crowned Duiker	*Cephalophus coronatus*	Mankero Wullengo
Gambian Oribi	*Oribia nigricandata*	Mankero Koio
Waterbuck	*Cobus defassa unctuosus*	Sinsing
Buffon's Kob	*Cobus Kob*	Wanto
Nagor Reedbuck	*Cervicapra redunca*	Kongkotong

SCHEDULE II.—*continued.*

English.	*Latin.*	*Mandingo.*
Roan Antelope	*Hippotragus equinus*	Da Koio
West African Situtunga	*Tragelaphus gratus*	Bato Menango
Lesser Bushbuck	*Tragelaphus scriptus typicus*	Menango
Wart-Hog	*Phacochœrus æthiopicus*	Saio
Red River Hog	*Sus porcus*	Saio Wullengo

SCHEDULE III.

Birds protected from the 30th June to the 31st December and eggs protected at all times.

Marabous
Egrets
Bustards
Francolins (or Bush-Fowl)
Guinea-Fowl
Sand-Grouse
Quail
Crown Birds (Crested Cranes)

SCHEDULE IV.

(*Form of Licence.*)

No. I. Sportsman's
No. II. Public Officer's } LICENCE.
No. III. Trader's
No. IV. Native's

Annual Fee payable..... £ . . .

The Wild Animals, Birds and Fish Preservation Ordinance, 1901.

A licence is hereby granted to A.B., of to hunt, capture and kill any of the animals or birds mentioned in Schedules II. and III. on the back hereof except during such times as such animals or birds are protected, and subject to the Regulations endorsed on the back hereof and to any other Regulations for the time being in force.

Dated this day of 19 .

Colonial Treasurer
(or *Travelling Commissioner*).

* Approved

Governor.

This licence is not transferable and expires on the 30th June next following the date hereof.

Regulations to be endorsed on the back.

Passed at a meeting of the Executive Council this Twenty-ninth day of July, 1907.

GEORGE C. DENTON,
Governor.

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* Omit in the case of traders' and natives' licences.

REGULATION UNDER SECTION III. OF THE WILD ANIMALS, BIRDS AND FISH PRESERVATION ORDINANCE, 1901.

Section five of the Regulations made on the twenty-ninth day of July, 1907 under Section three of the Wild Animals, Birds and Fish Preservation Ordinance 1901, is hereby amended by inserting after the word "hereto" therein occurrin the following words, viz. :—

"save and except Francolins (or Bush Fowl), Guinea-Fowl, and Sand-Grouse."

Passed in the Executive Council this Seventh day of July, 1908.

GEORGE C. DENTON,
Governor.

GAME LAWS OF SOUTHERN NIGERIA.

WILD ANIMALS, ETC., PRESERVATION.

(No. 15—1900).

WHEREAS the Colony of Southern Nigeria is within the zone specified in the firs article of a Convention for the Preservation of Wild Animals, Birds and Fish i Africa, signed at London on the 19th day of May, 1900.

1. This Ordinance may be cited for all purposes as "The Wild Animals, Bird and Fish Preservation Ordinance."

2. In this Ordinance unless the context otherwise requires—

"Colony" includes Protectorate.

"Animal" means any wild animal.

"Bird" means any wild bird.

"Collect" means to take and kill by any means any animals, birds or fish fo scientific purposes.

"Diseased" means affected with disease.

"Disease" means any infectious or contagious disease of wild or domesti animals or birds.

"Hunt" means to chase or pursue animals or birds for the sake of food o sport, and shall include to beat or to drive animals for another.

"Dangerous" means savage, vicious, or likely to spread disease.

"Young," as applied to an elephant, means having a tusk weighing less tha twenty-five pounds. (Amended, 1907.)

3. The Governor in Council may by order published in the Gazette do th following things or any of them :—

(a) Prohibit the hunting, capture and killing of any animal or bird mentione in the Schedule I. hereto, or the young of any animal mentioned in th Schedule II. hereto, or the female of any animal mentioned in th Schedule III. hereto when accompanied by its young.

(b) Define districts and prescribe the number of animals or male or femal animals of the species specified in Schedule IV. which may lawfully b killed or captured during the period mentioned in the order by any perso in any district so defined.

(c) Prohibit the taking out of the nest or the destroying in the nest of the egg of any bird mentioned in the order.

(d) Prohibit the hunting, capture and killing of any fish specified in the order.

(e) Prohibit the capture and killing of the young of any fish specified in the order, below the size therein mentioned.

(f) Prohibit the destroying of any spawning bed or any bank or shallow on which the spawn of fish may be.

(g) Prescribe a period or periods during which it shall not be lawful to hunt, capture or kill any animal or male or female animal, or the young of any animal, or any bird, or any fish or immature fish specified in the order, or take or destroy the eggs of any bird specified in the order.

(h) Appoint any tract or tracts of land within which it shall not be lawful to hunt, capture or kill any animal, bird or fish with the exception of those exempted by the order from the operation thereof.

(i) Prohibit the use of any poison or dynamite or any explosive or any trap, pit, snare, net or other instrument, device or means, mentioned in the order, for the purpose of taking or killing any animal, bird or fish specified in the order.

(j) Permit and regulate the killing when diseased or suspected of disease of domestic animals and of wild animals, notwithstanding the provisions of this Ordinance or any order thereunder, and the payment of compensation for domestic animals so killed, and generally make such further or other provisions for preventing the transmission of disease from or to or between wild animals as he may think fit.

(k) Prohibit or regulate the export of elephants' tusks.

(l) Establish export duties to be charged upon hides and skins of giraffes, antelopes, zebras, rhinoceroses and hippopotami, on rhinoceros and antelope horns, and on hippopotamus tusk, and upon the hides, skins, horns and tusks of any animal and on the skin and plumage of any bird specified in the order.

(m) Regulate the destruction of animals of the species mentioned in Schedule V. and generally of any poisonous, dangerous or destructive animal, bird or insect.

(n) Regulate the destruction of the eggs of crocodiles, poisonous snakes and pythons, and of any other poisonous, dangerous or destructive reptile, and of any poisonous, dangerous or destructive bird or insect.

(o) If it shall at any time appear that any animals or birds, the hunting, capture and killing of which is unlawful under this Ordinance, are seriously injuring crops, cattle, lands or other property, permit the hunting, capture and killing of such animals or birds by such persons upon such conditions and by such means as are mentioned in such order, and

(p) Generally make orders and regulations, and revoke, alter, or add to any such orders and regulations for the better execution of this Ordinance, and for the purpose of preserving animals, birds, and fish.

4. The Governor may by any order or regulation made by him under the provisions of section 3 of this Ordinance impose for every offence against any order or regulation such penalty not exceeding fifty pounds or such term of imprisonment not exceeding six months, as he may think fit.

5. The Governor in Council may make regulations with respect to all or any of the following matters:—

(a) Application for, issue and form of, hunting and collecting licenses;

(b) Fees to be charged for licenses;

(c) Returns to be furnished by holders of licenses under this Ordinance; and

(d) The imposition and enforcement of penalties for any breach of any regulation made in pursuance of this section.

6. Every order and regulation made under the provisions of this Ordinance shall be published in the Gazette, and shall upon such publication have full force and effect.

Unless and until varied or revoked in the manner above prescribed, the orders and regulations contained in Schedule VI. hereto shall be and remain in force.

SCHEDULE I.

(Series A.)

1. Vultures.
2. The Secretary bird.
3. Owls.
4. Rhinoceros-birds or Beef-eaters (Buphaga).

(Series B.)

1. The Giraffe.
2. The Gorilla.
3. The Chimpanzee.
4. The Mountain Zebra.
5. Wild Asses.
6. The White-tailed Gnu (Connochoetes Gnu).
7. Elands (Taurotragus).
8. The little Liberian Hippopotamus.

SCHEDULE II.

1. The Elephant.
2. Rhinoceroses.
3. The Hippopotamus.
4. Zebras of species not referred to in Schedule I.
5. Buffaloes.
6. Antelopes and Gazelles, namely, species of the genera Bubalis, Damaliscus Connochoetes, Cephalophus, Oreotragus, Oribia, Rhaphiceros, Nesotragus Madoqua, Cobus, Cervicapra, Pelea, Aepyceros, Antidorcas, Gazella Ammodorcas, Lithocranius, Dorcotragus, Oryx, Addax, Hippotragus Taurotragus, Strepsiceros, Tragelaphus.
7. Ibex.
8. Chevrotains (Tragulus).

SCHEDULE III.

1. The Elephant.
2. Rhinoceroses.
3. The Hippopotamus.
4. Zebras of the species not referred to in Schedule I.
5. Buffaloes.
6. Antelopes and Gazelles, namely, species of the genera Bubalis, Damaliscus Connochoetes, Cephalophus, Oreotragus, Oribia, Rhaphiceros, Nesotragus Madoqua, Cobus, Cervicapra, Pelea, Aepyceros, Antidorcas, Gazella Ammodorcas, Lithocranius, Dorcotragus, Oryx, Addax, Hippotragus Taurotragus, Strepsiceros, Tragelaphus.
7. Ibex.
8. Chevrotains (Tragulus).

SCHEDUDE IV.

1. The Elephant.
2. Rhinoceroses.
3. The Hippopotamus.
4. Zebras of the species not referred to in Schedule I.
5. Buffaloes.
6. Antelopes and Gazelles, namely, species of the genera Bubalis, Damaliscus, Connochoetes, Cephalophus, Oreotragus, Oribia, Rhaphiceros, Nesotragus, Madoqua, Cobus, Cervicapra, Pelea, Aepyceros, Antidorcas, Gazella, Ammodorcas, Lithocranius, Dorcotragus, Oryx, Addax, Hippotragus, Taurotragus, Strepsiceros, Tragelaphus.
7. Ibex.
8. Chevrotains (Tragulus).
9. The various Pigs.
10. Colobi and all fur-Monkeys.
11. Aard-Varks (genus Orycteropus).
12. Dugongs (genus Halicore).
13. Manatees (genus Manatus).
14. The small Cats.
15. The Serval.
16. The Cheetah (Cynoelurus).
17. Jackals.
18. The Aard-wolf (Proteles).
19. Small Monkeys.
20. Ostriches.
21. Marabous.
22. Egrets.
23. Bustards.
24. Francolins, Guinea-fowl and other "Game Birds."
25. Large Tortoises.

SCHEDULE V.

1. The Lion.
2. The Leopard.
3. Hyænas.
4. The Hunting Dog (Lycaon pictus).
5. The Otter (Lutra).
6. Baboons (Cynocephalus) and other harmful Monkeys.
7. Large birds of prey, except Vultures, the Secretary bird and Owls.
8. Crocodiles.
9. Poisonous Snakes.
10. Pythons.

SCHEDULE VI.

1. ORDER.

(24th August, 1905.)

The following acts are hereby prohibited:—

1. The hunting, capture or killing of—

(a) Any of the following birds or animals, viz., vultures, secretary birds, owls,

rhinoceros-birds, giraffes, gorillas, chimpanzees, mountain zebras, wild asses, white-tailed gnus, elands and little Liberian hippopotami;

(b) The young of any of the following animals, viz., elephants, hippopotami, buffaloes, antelopes and gazelles, except by the holders of collector's licenses; and

(c) The female of any of the animals mentioned in sub-section (b) when accompanied by its young;

(d) Birds during the nesting season, which in the case of partridges is to be considered to extend from August 1st to December 15th, and in the case of ducks, geese and other water-fowl, from March 1st to June 30th.

2. The hunting, capture or killing of elephants by persons other than the holders of licenses.

3.—(i) The use of dynamite or any explosive or poison for the purpose of capturing or killing fish in any river, stream, brook, lake, pond or lagoon within the Colony or Protectorate.

(ii) The use of poison to kill any wild animal or bird.

4. The possession or sale of elephants' tusks of less than twenty-five pounds in weight, unless it be proved that such tusks are those of elephants killed before the date of the commencement of this Ordinance, or in case of tusks of less than ten pounds in weight, before the 31st October, 1901.

5. The possession of any animal, bird or fish, or any hide, skin, horn, tusk or any part of any animal, bird or fish, or any egg of any bird, the hunting, capture, killing or taking of which is prohibited by this Order.

Any person doing any act in contravention of this Order shall be liable, on conviction before a District Commissioner, to a fine not exceeding twenty-five pounds, or to imprisonment, with or without hard labour, for any period not exceeding three months.

In this Order District Commissioner includes Resident or other officer appointed by the Governor to be in charge of any district in the Colony or Protectorate.

2. Regulations.

(29th August, 1905.)

Licenses.

1. Licenses may be issued in any district by the District Commissioner.

2. Every license shall have inscribed upon it the district in which the licensee may hunt. If a licensee desire to hunt or collect in any other district he must have his license endorsed by the District Commissioner of such district.

3. Licenses shall be issued for periods of six months or one year, and the following fees shall be payable thereon:

Elephant Licenses.

License for six months	£10
License for one year	20

Collector's Licenses.

License for six months	£6
License for one year	10

4. Licenses shall be in the forms in the appendix hereto.

Rules 2, 5, 6, 7, 8, 9 and 10 shall be endorsed on every license.

5. Upon the expiration or revocation of a license such license shall be handed by the licensee to the District Commissioner of the district.

6. A royalty of twenty-five per cent. of ivory obtained, or the value thereof at the current market price at the date when the elephant was killed, shall be paid to the Government.

7. Twenty-five per cent. of the meat of every elephant killed shall be given to the natives who own the bush in which the elephant is killed.

8. Every licensee shall report to the District Commissioner of the district on the first day of every month or within fourteen days thereafter, the number of animals or birds killed or collected by him, and also their sex and species. The tusk of any elephant killed shall be brought at the same time to such District Commissioner, and the royalties payable under rule 6 hereof shall be paid.

9. Every licensee shall produce his license at the request of any District Commissioner.

10. Any person who contravenes any of the foregoing regulations shall be liable to a penalty not exceeding twenty-five pounds, or to imprisonment for a term not exceeding three months, with or without hard labour, and his license may be revoked.

11. In these rules District Commissioner includes Resident or other officer appointed by the Governor to be in charge of any district in the Colony or Protectorate.

APPENDIX.

Elephant License.

No. .

THE WILD ANIMALS, BIRDS AND FISH PRESERVATION ORDINANCE."

District.

Permission is hereby granted to to hunt elephants in District for the period extending from the day of , 19 , to the day of , 19 . Dated the day of , 19 .

Fee paid.

District Commissioner.

(Rules 2, 5, 6, 7, 8, 9 and 10 to be endorsed on this license.)

A.L.A.

No. .

"THE WILD ANIMALS, BIRDS AND FISH PRESERVATION ORDINANCE."

District.

Permission is hereby granted to to hunt elephants in District for the period extending from the day of , 19 , to the day of , 19 . Dated the day of , 19 .

Fee paid.

District Commissioner.

(Rules 2, 5, 6, 7, 8, 9 and 10 to be endorsed on this license.)

L L

Collector's License.

No. .

"THE WILD ANIMALS, BIRDS AND FISH PRESERVATION ORDINANCE."

Permission is hereby granted to to collect any animals (except elephants) or birds in District from the day of , 19 , to the day of , 19 .

Dated the day of , 19 .

Fee paid.

District Commissioner.

No. .

"THE WILD ANIMALS, BIRDS AND FISH PRESERVATION ORDINANCE."

Permission is hereby granted to to collect any animals (except elephants) or birds in District from the day of , 19 , to the day of , 19 .

Dated the day of , 19 .

Fee paid.

District Commissioner.

3. APPOINTMENT OF A RESERVE.

(23rd May, 1907.)

The following tract of land is appointed a reserve, within which it shall not be lawful to hunt, capture or kill any animal or bird whatsoever; that is to say :—

All that tract of land which lies within the boundaries formed by the Gwato Creek, the Benin River, and the Davey or Ologi Creek on the west, south and east respectively, and the road between Gilli-Gilli and Kolo-Kolo on the north.

4. CLOSE TIME FOR ELEPHANTS.

It shall be lawful to hunt, capture or kill any elephant on any day of the year between the 1st June and the 30th November, both inclusive.

ENCLOSURE IN No. 32.

Rule No. 9 of 1909.

COLONY OF SOUTHERN NIGERIA.

REGULATIONS under the Wild Animals, Birds, and Fish Preservation Ordinance.

1. Licences may be issued in any district by the District Commissioner or by any officer of the Forestry Department of not less rank than Assistant Conservator, 2nd grade, who is in the said district.

2. Every licence shall have inserted upon it the district in which the licensee may hunt. If a licensee desire to hunt or collect in any other district he must have his licence endorsed by the District Commissioner of such district, or by an officer of the Forestry Department of not less rank than Assistant Conservator, 2nd grade.

3. Elephant licences shall be issued for the season, that is to say, from

December the 1st to May 31st inclusive, and the following fee shall be paid hereon :—

Elephant Licences.

Licence for the season or any part thereof ..	£10

Collector's licences shall be issued for periods of six months or one year, and he following fees shall be paid thereon :—

Collector's Licences.

Licence for six months	£6
Licence for one year ,, ...	10

4. Rules 2, 5, 6, 7, 8, 9 and 10 shall be endorsed on every licence.

5. Upon the expiration or revocation of a licence such licence shall be handed y the licensee to the District Commissioner of the district, or to any officer of he Forestry Department as aforesaid in such district, who shall forward the ame to the District Commissioner.

6. A royalty of twenty-five per cent. of ivory obtained, or the value thereof at he current market price at the date when the elephant was killed, shall be paid o the Government.

7. Twenty-five per cent. of the meat of every elephant killed shall be given to he natives who own the bush in which the elephant is killed.

8. Every licensee shall report to the District Commissioner or to the officer of he Forestry Department as aforesaid who shall forward the same to the District ommissioner of the district on the first day of every month or within fourteen ays thereafter, the number of animals or birds killed or collected by him, and lso their sex and species. The tusks of any elephant killed shall be brought at the ame time to such District Commissioner or to the officer of the Forestry Depart- ent as aforesaid, and the royalties payable under rule 6 hereof shall be paid.

9. Every licensee shall produce his licence at the request of any District Com- issioner, or officer of the Forestry Department as aforesaid, or officer of the olice Force of not less rank than Assistant Commissioner.

10. Any person who contravenes any of the foregoing regulations shall be able on conviction before a Police Magistrate or District Commissioner to a enalty not exceeding twenty-five pounds, or to imprisonment for a term not xceeding three months, with or without hard labour; his licence shall also be evoked.

11. In these rules District Commissioner includes Resident or other officer ppointed by the Governor to be in charge of any district in the Colony or rotectorate.

C. T. LAWRENCE,
Clerk to the Executive Council.

Ordered in Council this 24th day of August, 1909.

W. EGERTON,
Governor and Commander-in-Chief.

A PROCLAMATION.

Enacted by the Governor of Northern Nigeria.

E. P. C. GIROUARD.

A PROCLAMATION to provide for the preservation of Wild Animals, Bird and Fish.

WHEREAS the Protectorate of Northern Nigeria is within the zone specified i the first article of a convention for the preservation of Wild Animals, Birds an Fish in Africa, signed at London on the 19th day of May, 1900.

BE IT ENACTED by the Governor of Northern Nigeria as follows:—

1. This Proclamation may be cited as "The Wild Animals Proclamatic 1909."

2. "The Wild Animals, Birds and Fish Preservation Proclamation" No. 15 1901 and all regulations made thereunder are hereby repealed.

3. For the purposes of this Proclamation the following words shall have t meanings hereunder:—

"Animal" and "bird" mean any wild animal or bird whether adult immature.

"Collect" means to capture or kill for scientific purposes, or on behalf of public museum or other public collection maintained for scientific purposes.

"Young" as applied to a male elephant means having a tusk weighing le than 15lbs. avoirdupois.

"Hunt," "Capture," "Kill" and "Injure" include respectively attempting aiding to hunt, capture, kill and injure.

"Licensing Officer" means any officer authorised by the Governor to gra licences hereunder.

"Court" shall mean "The Supreme Court or any Provincial Court."

General Provisions.

4. (1) Any person killing, capturing or injuring a young elephant shall guilty of an offence; and on conviction shall be liable to a penalty not exceedi £50, or to imprisonment for a period not exceeding six months or both.

(2) Any person found in the possession of any elephant tusk weighing less th 15lbs. avoirdupois shall be liable to a penalty not exceeding £50, or to imprisc ment not exceeding six months, and such tusk shall in every case be liable to forfeited to His Majesty, unless such person can prove that he acquired su tusk before the date on which this Proclamation shall come into force.

5. (1) For the purposes of this Proclamation, wild animals and birds divided into the three schedules hereinafter numbered 1, 2 and 3.

(2) The Governor may at any time by notice in the Gazette remove a animal or bird from any schedule, or include any animal or bird in any schedu

6. Any person, whether the holder of a licence or not, who shall:

(*a*) Kill, capture or injure any of the animals or birds included in schedul unless specially authorised thereto under the provisions of this Proclamat shall, if a non-native, be liable on conviction to a fine not exceeding £100 imprisonment not exceeding twelve months for each and every elepha rhinoceros, and chimpanzee so captured or injured, and to a fine not exceed £50 or imprisonment not exceeding six months for each other animal included

chedule 1, and to a fine not exceeding £5 or imprisonment not exceeding four-een days for any bird included in the said Schedule; and if a native he shall be able to half the penalties aforesaid in each case.

(*b*) Intentionally kill, capture or injure the female of any animal (or bird) ncluded in Schedules 1 and 2, shall be liable on conviction if a non-native to fine not exceeding £50 or imprisonment, not exceeding six months and if a ative to half the penalties aforesaid.

(*c*) Use poison or dynamite or any other explosive for the purpose of taking or estroying fish in any waters, shall be liable on conviction to a fine not exceeding 50 or imprisonment not exceeding six months.

7. Notwithstanding anything in this Proclamation contained no person shall be eemed to have committed an offence against this Proclamation by reason of his aving killed or injured any animal or bird in defence of himself or any other erson, but he shall report such occurrence forthwith to the Licensing Officer. Any person failing to so report shall be liable to a penalty not exceeding £5 or o imprisonment not exceeding one month.

8. Any animal, bird, or fish which has been captured or killed contrary to the rovisions of this Proclamation, and any part of such animal, bird, or fish shall e liable to be forfeited to His Majesty. Provided that if it if shewn to the atisfaction of a Court that there was ground for believing that the owner of an lephant tusk (being a native of the Protectorate) the value of which exceeds the enalty which it considers should be inflicted under this section, killed the lephant in *bona fide* ignorance of the law, it shall be lawful for the court to nflict only such total penalty, including the confiscation of the tusk, as may seem n its discretion to be required, and for this purpose may cause the tusk to be old and part value returned to the owner.

9. The sale, purchase or exposure for sale of the hides, horns, flesh, or eggs r of any trophies of any of the animals and birds included in Schedules 1 and 2 ereto (other than ivory or ostrich feathers), obtained in contravention of this roclamation is absolutely prohibited.

Any person contravening this section shall be liable to a fine not exceeding 10 or to imprisonment not exceeding two months, and all such articles as foresaid shall be liable to confiscation.

10. (1) No person shall fire at any wild animal or bird with a rifle or gun from steamer in motion.

Any person contravening this section shall be liable to a fine not exceeeing £5, r in default to imprisonment not exceeding fourteen days.

Licences to Non-Natives.

11. (1) Licences for the hunting, killing and capturing of animals and birds ncluded in Schedules 2 and 3 may be granted by a Licensing Officer, in his iscretion, to any non-native applying for the same. Such licences shall be of wo kinds called respectively A, and B.

(A) Licence to hunt, kill, or capture any animals or birds other than those in Schedule 1.

(B) Licence to hunt, kill, or capture any animals or birds other than those in Schedules 1 and 2.

(2) If the holder of a licence "A" desires to hunt, kill, or capture any animal

or bird in Schedule 1, he may do so to the extent of one only of each species o kind, provided that a fee of £1 shall subsequently be paid on each animal o bird in Schedule 1 so killed or captured.

If the holder aforesaid desires to kill two of any animal or bird in Schedule 1 he must first obtain the sanction of the resident of the province and subsequentl pay the fee, provided that the resident shall not sanction a second ostrich o giraffe. Not more than two in all of any such animal or bird may be killed c captured under each licence.

(3) Every licence shall remain in force for one year from the date of issu provided that a licence may be renewed at the expiration of the year on monthly payment as fixed by the regulations under this Proclamation.

(4) The fees payable by the holders of licences shall be fixed by regulatio made by the Governor and published in the *Gazette*.

(5) No holder of a licence shall capture or kill a greater number of animals c birds of any species included in Schedule 2 than the number specified from tim to time by the Governor and published in the regulations nder this Proclamatio

(6) The Governor may at any time by notice in the *Gazette* alter the number c any species of animal or bird shewn in Schedule 2 and Schedule 3 which may b captured or killed by the holder of a licence and may vary the areas in whic such species may be killed.

(7) If the number of any species of animals or birds killed, captured or injure as shewn in the "Sportsman's Record" (as described hereinafter) shall be foun to be in excess of the number authorised under this proclamation, and th licensing officer shall be satisfied that the killing or injuring of the animals c birds was not intentional, it shall be lawful for him to cause the holder of th licence to pay the fee laid down in Schedule 4 for each animal or bird so killed c injured in lieu of enforcing the penalty in a court of law.

(8) All huntsmen, beaters, and other assistants aiding the holder of a Licenc A. or B. to hunt, capture or kill any animal or bird which such licence holder i authorised by his licence to hunt, capture or kill shall be covered while so actin by such licence, provided that such huntsman, beaters or assistants shall not fir at or in any way injure any unwounded animal or bird with any firearm or bo or arrow, or other weapon.

(9) No licence is transferable, and if an original licence be lost or destroyed duplicate may be obtained from the licensing officer on payment of 1s.

(10) Every holder of a Licence A, shall keep an account of all animals an birds captured or killed by him of the species included in Schedule 2, and of an species in Schedule 1 which may be specially mentioned in his licence, or whic he may have captured or killed under section 11 (2) above.

This account, which shall be called the "Sportsman's Record," shall be in th form laid down in the regulations under Schdule 5 hereto. The signature of th holder of the licence to the "Sportsman's Record" shall be held to be a declara tion that all such animals or birds as should appear therein have been include and that the account is in all respects to the best of his knowledge and belief true and accurate account. There shall be entered also in the "Sportsman Record" the same details, respecting any other large game captured or killed, th hunting of which is not prohibited, including any antelope or gazelle, lio leopard, hyena, jackal, serval cat, hunting dog, or other animals or birds n named in the Schedule.

Every licence holder shall produce his "Sportsman's Record" together with his licence whenever called upon to do so by any District or Police Officer of the Government, and shall deliver a copy of such account, signed by himself, to the Licensing Officer upon the expiration of his licence or upon his leaving the Protectorate, whichever first happens, or upon any other day named in the licence or under any Regulation, for the purpose of compiling the annual returns or for any other purpose.

(11) A Licence B, while operative, may be changed for a Licence A on payment of the difference between the full fees chargeable on each license but the substituted licence shall expire upon the day when the original licence would have expired.

(12) If a holder of a licence be ordered by the Government to leave the protectorate either on sick leave or duty, it shall be lawful for a licensing officer on the application of the holder of the licence if the licence has not yet run for six months, to refund a half of the fees paid therefor.

(13) Any person killing, injuring, or capturing any animal or bird in contravention of this section, or refusing to produce his licence or "Sportsman's Record" as aforesaid when called upon to do so, or wilfully producing an incorrect account, shall be liable on conviction to a fine not exceeding £100 or to imprisonment for a term not exceeding twelve months.

Collector's Licence.

12. The Governor may authorise the grant to a collector, or in special circumstances to any other person, of a special licence to be called a Collector's licence, and such licence may include authority to hunt, kill or capture any species or numbers of any animal or bird in Schedules 2 and 3, and such specified animals or birds in Schedule 1 as may be endorsed thereon by the Governor.

The holder of a Collector's licence shall be liable to the penalties laid down in section 6 if he kills, captures or injures any animals or birds in Schedule 1 not shewn upon his licence and in all other respects is bound by the same restrictions as a holder of Licence A.

Restriction on Killing Game by Natives.

13. (1) A permit in the Form C may be granted by a Licensing Officer with the sanction of the Resident of the Province to any native, or group of natives, or tribe of the Protectorate to hunt, kill or capture any wild animal or bird in Schedule 2, such permit shall specify the numbers of each species or kind which may be killed or captured and may include any animal or bird in Schedule 1 with the special sanction of the Governor. Such permit may also specify the area over which such native or group of natives or tribe may hunt, kill, or capture.

Any native, not being in possession of Permit C, or not being included in a group of natives, or tribe as above, who shall hunt, capture, kill or injure any animal or bird included in Schedules 1 and 2 shall be liable on conviction to a fine not exceeding £10 or imprisonment not exceeding three months for each such animal or bird which shall have been killed or captured or for contravening in any other way the provisions of this section (13).

(2) Any native of the Protectorate may hunt, kill or capture any animal or bird in Schedule 3.

(3) No native may use any pit-fall, net or trap for the purpose of killing or capturing any animal or bird included in Schedules 1 and 2.

(4) Any native who is found in possession of any animal or bird, living or dead, or any part of such animal or bird, or of the eggs of ostrich or marabout, shall be deemed to have killed or captured such animal or bird or taken such eggs unless the contrary be shewn. Provided that if any horn, ivory, skin or other part of an animal or bird or the eggs as aforesaid had clearly been acquired before the date on which this Proclamation shall come into force, the owner of such horn, ivory, skin, etc., shall not be deemed to have committed an offence against this Proclamation.

(5) The Governor may by notice in the *Gazette* suspend the operation of this section or any part of it, whether, as regards any province for reason of any temporary administrative difficulty in enforcing the same, or for other good reason it shall seem to him expedient to do so. Provided that no such suspension shall be deemed to authorise the killing of young elephants, or female elephants.

(6) If it shall be shewn to the satisfaction of the Resident of a Province that any animals or birds are continually committing depredations upon cultivated lands, or are destroying crops, or endangering the lives of natives resident upon or in the vicinity of such lands, and that all ordinary means for protecting the said lands, crops or natives, and of driving away the said animals and birds, have been duly tried without success, it shall be lawful for the Resident in charge to permit the said natives resident thereon or a holder of a licence to kill or capture a certain number of such animals or birds, in such a manner and during such period, as he, in his discretion, may consider necessary. Provided that in such a case he shall report all the circumstances to the Governor.

14. "Game drives," and the indiscriminate slaughter of any animals or birds in Schedules 1 and 2 by bands of natives is prohibited. The chief or headman of any town, village, or community which shall contravene the provisions of this section shall be liable to a fine not exceeding £50 or to imprisonment not exceeding 12 months.

Legal Procedure.

15. Where any Resident, Cantonment Magistrate or Superior Officer of Police (as defined in the Police Proclamation, 1908, section 2) considers it expedient to verify the "Sportsman's Record" of a licence holder, or suspects that any person has been guilty of a breach of any of the provisions of this Proclamation or of the conditions of his licence, he may inspect and search, or authorise any subordinate officer to inspect and search, any baggage, package, wagon, tent, building, caravan, canoe, or boat of any description belonging to or under the control of such person or his agent, and if the officer finds any heads, horns, tusks, skins, feathers, or other remains of the animals appearing to have been killed, or any live animals appearing to have been captured in contravention of this Proclamation, he shall seize and take the same before a Court to be dealt with according to law.

16. Any person acting *bona fide* shall not be liable to any suit for seizing or detaining any animal, bird, or fish subject, or presumably subject, to the terms of this Proclamation.

17. (1) Any person convicted of contravening this Proclamation by killing, hunting or capturing any animal or bird protected by this Proclamation, without a licence, or with an insufficient licence, shall be liable to all fees which would have been payable by him for taking out a sufficient licence, in addition to any fine or imprisonment.

(2) The licence of any person convicted under this Proclamation shall be liable to be forfeited.

(3) All animals, birds, skins, horns, tusks, feathers, eggs, trophies and carcasses of animals or birds killed in contravention of this Proclamation shall be liable to confiscation and may be seized by any customs or police officer subject to a right of appeal to any Court having jurisdiction at the place of seizure.

18. Any person found in possession of any hides, horns, or flesh or eggs or of any trophies of any of the animals and birds included in Schedules 1 and 2 (other than ivory or ostrich feathers) shall be deemed to have collected them for sale unless the contrary be shewn, or unless they have been collected prior to the date on which this Proclamation came into operation.

Conditions of Export.

19. (1) There shall be payable on export from the Protectorate a duty of 10% *ad valorem* on all horns, hides, skins and other trophies of all animals and birds in Schedules 1 and 2 (other than ostrich feathers) whether obtained in, or from beyond, the Protectorate. Provided that the holder of a licence shall not be liable for the said duties in respect of the export of any hides, skins, horns, or other trophies obtained by him under his licence.

(2) Any person failing to pay or attempting to evade the duties imposed by this section shall be liable to a fine not exceeding three times the amount of the said duty, and the said trophies &c., shall be liable to confiscation, as smuggled goods.

20. (1) Any person exporting alive any of the animals named in Schedule 4, unless the same shall have been captured by himself under a licence (other than a collector's licence in respect of any animal or bird included in Schedule 1) shall pay an export duty according to the scale set down in that Schedule.

(2) Any person failing to pay or attempting to evade the duty imposed by this section shall be liable to a fine not exceeding three times the amount of the duty and the animal or bird shall be liable to confiscation, as smuggled goods.

Game Reserves.

21. The Governor may by notice in the *Gazette* declare any area within this Protectorate to be a reserve, and thereupon it shall be unlawful to capture or kill or to attempt to capture or kill any animal or bird of any kind whatsoever within such area, except as provided by regulations made in the manner hereinafter mentioned; and any person offending against the provisions of this section, shall be liable on conviction to a penalty not exceeding £50, or to imprisonment for a period not exceeding six months.

22. No person shall remove, disturb, or injure, the eggs of an ostrich, marabout, or of any other bird which may from time to time be notified in the *Gazette*, except with the written permission of the Resident in charge of the Province, in which case the number of eggs removed or injured shall be stated in his "Sportsman's Record."

23. The Governor may make regulations for the carrying out of the provisions of this Proclamation and may cancel, alter, add to, or amend any such regulation, and particularly may make regulations with regard to the following matters:—

(*a*) Declaring a close time or close times during which any wild animal or bird specified in such regulations shall not be hunted, captured or killed, or the flesh thereof sold or offered for sale;

(*b*) Restricting the capturing or killing of the females of animals and birds;

(*c*) Permitting the capturing or killing of any animals and birds on reserves;

(*d*) Defining what are game birds within the meaning of Schedule 3 hereof;

(*e*) Granting of licences to kill or capture animals, birds, and fish and making such licences revocable upon breach of any conditions thereof:

(*f*) Granting licences to collect wild animals, birds, and fishes;

(*g*) The application for, issue, and form of licences;

(*h*) Fees to be charged for licences;

(*i*) Returns to be furnished by holders of licences;

(*j*) The creating of close seasons for facilitating the rearing of young by animals, birds, and fish;

(*k*) Prohibiting the capturing or killing of any fish specified in such regulation;

(*l*) Prohibiting the capturing or killing of any fish specified in such regulation, below the size therein mentioned;

(*m*) Prohibiting the destroying of any spawning bed or any bank or shallow on which the spawn of fish may be;

(*n*) Restricting the use of nets, pitfalls, or traps of any kind for capturing animals, birds, and fish;

(*o*) Prohibiting or regulating the use of dogs in the capturing and killing of animals and birds;

(*p*) Prohibiting or regulating the export of elephant tusks;

(*q*) The supervision and isolation of domestic animals suffering from contagious diseases, and the taking of measures to prevent the transmission of contagious diseases from such domestic animals and birds to wild animals and birds and for enforcing and regulating the killing of any domestic animals and bird as aforesaid and the payment of compensation for any animals and birds so killed.

(*r*) Insuring the protection of the eggs of ostriches marabout and of such other birds as the Governor may think it expedient to protect;

(*s*) Procuring the destruction of the eggs of crocodiles, poisonous snakes and pythons;

(*t*) Permitting (if it shall at any time appear that any animals, or birds the capturing and killing of which is unlawful under this Proclamation, are seriously injuring crops, cattle, lands, or other property) the capturing and killing of such animal or birds, by certain persons upon such conditions and by such means as are mentioned in such permit.

(*u*) Encouraging and affording facilities for the domestication of zebras elephants, ostriches and other animals capable of, or susceptible to domestication.

(*v*) Offering rewards for the carrying out of any of the objects referred to in the Proclamation or any regulation thereunder,

And may attach a penalty not exceeding £25 or imprisonment for any period not exceeding three months, to the breach of any such rule or regulation.

24. Unless and until varied or revoked in manner above provided the regulations contained in Schedule 5 hereto shall be and remain in force.

25. This Proclamation shall commence and come into operation on the 5th day of August in the year of our Lord, One thousand nine hundred and nine.

SCHEDULE 1.

Animals which may not be hunted, killed or captured except by special sanction of the Governor in case of each individual animal or bird:

(*a*) By Collectors.
(*b*) By Natives.
(*c*) By Holders of Licence A.

Giraffe,	Vulture,
Elephant,	Owl,
Rhinoceros,	Rhinoceros bird,
Zebra,	Chimpanzee,
Ostrich,	Wildebeest,
Ground horn-bill,	Kudu,
Secretary bird,	Hippopotamus,
Manatee,	Eland.

SCHEDULE 2.

Animals of which a specified number (in accordance with Regulations) may be killed or captured by the holder of Licence A.

Buffalo,	Addra Gazelle,
Roan Antelope,	Dama Gazelle,
Sing-Sing Water Buck,	Dorcas Gazelle,
West African Bush Buck or Harnessed Antelope,	Duiker (all species),
	White Oryx,
Reed Buck,	Oribi,
Bongo,	Wart Hog,
West African Hartebeest,	River Hog or Bush Pig,
Senegal Hartebeest,	Egret,
Buffon's Kob,	Crowned Crane,
Senegal or Red-fronted Gazelle,	Greater Bustard,
	Marabout Stork.

SCHEDULE 3.

Game Birds and Ground Game.

Guinea Fowl,	Quail,
Sand Grouse,	Geese,
Red-eyed, and Green Pigeons,	Duck, Widgeon, Mallard,
	Teal,
Rock Fowl,	Snipe,
Francolins,	Hares,
Floricans,	Porcupines,
Partridges,	Lesser Bustards.

SCHEDULE 4.

Export tax on living animals and birds:—

	£	s.	d.
Elephant, Rhinoceros, Chimpanzee, Hippopotamus	10	0	0
Giraffe, Ostrich, Kudu, Zebra, Eland, Wildebeest, Manatee, Addra Gazelle, White Oryx.	5	0	0
Secretary Bird, Ground Horn-bill, Colobus Monkey, Lion, Leopard.	3	0	0
All others named in Schedules 1 and 2	1	0	0

Given under my hand and the Seal of the Protectorate of Northern Nigeria this 5th day of April in the year of our Lord, One thousand nine hundred and nine.

E. P. C. GIROUARD,
Governor.

This printed impression has been carefully compared by me with the Proclamation which has been approved by the Governor and found by me to be a true and correct printed copy of the said Proclamation.

M. H. D. BERESFORD,
Secretary to the Administration.

SCHEDULE 5.

Regulations.

1. A Licensing Officer in respect of Licences A and B, and native permits shall be any police officer, and in the absence of a police officer any district officer on his behalf.

2. Licences shall be in one or other of the forms set out in Schedule A hereto and shall be subject to the conditions and to the penalties in respect of the breach of any such conditions therein set out, or to such other conditions and penalties as the Governor acting in accordance with the provisions of the Proclamation, may from time to time add to or substitute therefor.

3. The fees payable in respect of licences shall be as follows:—

Collector's Licence Fee	£10	0	0	Monthly renewal Fee	£1	5	0
Licence A	„	2	0	0	„	„	„	0	5	0
B	„	0	5	0	„	„	„	0	1	0

A renewed licence does not entitle the holder to kill or capture any additional animals or birds beyond the numbers stated on his original licence.

4. Any person desiring to export any of the articles or animals named in sections 18 and 19 or any live animals which are subject to duty under the terms of this Proclamation shall be bound to declare them to the Customs Officer at Lokoja or Illorin.

5. Whenever ivory is confiscated under this Proclamation (either tusks under

15 lbs. in weight, or tusks confiscated from an unlicensed person), the resident will forward them from time to time to the Collector of Customs, Lokoja, who will dispose of them to the highest bidder, and pay in the proceeds to the Treasury to the credit of the Revenue of the Province concerned. He will receipt and return to the Resident the way-bill for the ivory, together with a note of the amount realised, for entry in the Provincial Revenue returns.

6. The Collector of Customs will consign the tusks so purchased to Burutu by a Government vessel, where they will be handed over to the purchaser by the Assistant Marine Superintendent. If the purchaser is unable to take delivery at Burutu, the Collector of Customs may in exceptional cases furnish the purchaser with a permit for export, and will mark the tusks to correspond with the permit.

7. The number of each species of animal and bird in Schedule 2 which may be killed or captured by the holder of a Licence A is as follows:

4 Buffalo	2 Addra Gazelle
4 Roan Antelope	2 Dama Gazelle
4 Sing Sing Water Buck	2 Dorcas Gazelle
2 West African Bush Buck (Harnessed Antelope)	4 Duiker
4 Reed Buck	2 White Oryx
2 Bongo	4 Oribi
4 West African Hartebeest	4 Wart Hog
4 Senegal Hartebeest	4 River Hog or Bush Pig
6 Buffon's Cob	4 Egrets
4 Senegal (or red fronted) Gazelle	4 Crown Crane
	2 Greater Bustard
	2 Marabout Stork (but not within 2 miles of any town, village or station).

Provided that double the above numbers may be shot in the provinces of Muri, Bassa, Nassarawa, Yola.

8. Residents of Provinces will make close seasons in their Provinces for the Game birds enumerated in Schedule 3. Such seasons shall with the concurrence of the Governor be published in the Gazette.

9. The following shall be game Reserves:—

(*a*) All land within 3 miles of the Cantonment of Zungeru.

(*b*) „ „ „ Lokoja.

(*c*) The whole of the British portion of Lake Chad and the western shores thereof which are enclosed within the lines of the Anglo-German and Anglo-French boundaries and a line drawn from the Anglo-German Frontier near Billa Butube through Ngelewa, Ngarnu, Maduari, Kengoa, Arge, to Yo, and thence along the south bank of the Yo river to the Lake.

Any person desiring to kill or capture animals or birds within the precincts of Game Reserve may apply to the Governor for a permit. The granting of such permit shall be in the discretion of the Governor and shall be subject to all the conditions and penalties of the Proclamation.

10. The following areas are declared to be exempt from the operation of section 13.

Okpoto, Agato, and Igbo districts of the Bassa Province.

A PROCLAMATION.

Enacted by the Governor of Northern Nigeria.

H. HESKETH BELL,
Governor.

A PROCLAMATION to amend "The Wild Animals Proclamation 1909."

BE IT ENACTED by the Governor of Northern Nigeria as follows:—

1. This Proclamation may be cited as "The Wild Animals (Amendment) Proclamation 1910" and shall be read and construed as one with "The Wild Animals Proclamation 1909" hereinafter referred to as the principal Proclamation.

2. The principal Proclamation is hereby amended as follows:—

(1) In section 5 (2) in the first line thereof substitute the word "regulation" for the words "notice in the Gazette."

(2) Section 9 is hereby repealed and the following substituted therefor:—

Section 9. The sale, purchase or exposure for sale of the hides, horns, or flesh and eggs or of any trophies of any of the animals and birds included in the Schedules 1 and 2 hereto other than ivory and ostrich or marabout feathers not obtained in contravention of this Proclamation is absolutely prohibited.

Any person contravening this section shall be liable to a fine not exceeding £10 or to imprisonment not exceeding two months and all such articles as aforesaid shall be liable to confiscation.

(3) Section 11 (2) is hereby repealed and the following substituted therefor:—

Section 11 (2). A holder of a licence A in addition to hunting, killing and capturing such animals and birds as are included in Schedules 2 and 3, may at the time of issue of such licence obtain authority in advance to hunt, kill or capture any of the animals (not exceeding one Giraffe and one Ostrich and two of any of the species) included in Schedule 1 as the Licensing Officer may determine —provided that a fee of £1 shall subsequently be paid on each animal or bird in Schedule 1 so killed or captured.

(4) In section 11 (5) in the fifth line thereof substitute the word "under" for "nder."

(5) In section 11 (6) in the first line thereof substitute the word "regulation" for the words "notice in the Gazette."

(6) In section 11 (10) in the fourth line thereof substitute the words "of the species included" for the word "species"; the word "Schedule" for "Schdule" in the ninth line thereof and the word "record" for the word "account" in the twelfth, fourteenth and twenty-third lines thereof.

(7) In section 11 (13) in the fifth line thereof substitute the word "record" for the word "account."

(8) In section 13 (1) delete the words "in the form C" in the first line thereof, and "C" in the eleventh line thereof.

(9) In section 13 (2) add the words "other than marabouts captured only to be deprived of their plumes and immediately liberated afterwards."

(10) In section 13 (5) substitute the word "regulation" for the words "notice in the Gazette" in the first line thereof, and the word "if" for the word "whether" in the third line thereof.

(11) In the marginal note to 13 (6) substitute the word "natives" for "native."

(12) In section 15 substitute the word "any" for the word "the" in the thirteenth line thereof.

(13) In section 16 between the words "fish" and "subject" insert the words "or any part or parts thereof."

(14) In section 19 (1) between the words "than" and "ostrich" insert the words "ivory and marabout or " in the fourth line thereof.

(15) In section 21 in the first line thereof substitute the word "regulation" for the words "notice in the Gazette."

3. This Proclamation shall commence and come into operation on the 28th day of February in the year of our Lord, One thousand nine hundred and ten.

Given under my hand and the Seal of the Protectorate of Northern Nigeria this 31st day of January in the year of our Lord, One thousand nine hundred and ten.

H. HESKETH BELL,
Governor.

EXTRACT FROM GAME LAWS OF SIERRA LEONE.

ENCLOSURE 1 IN No. 33.

REGULATIONS made under Section II. (8) of "The Wild Animals, Birds and Fish Preservation Ordinance, 1901." (No. 30 of 1901.)

By virtue of the powers vested in the Governor-in-Council by Section II. (8) of "The Wild Animals Birds and Fish Preservation, Ordinance, 1901," it is hereby ordered that licences authorising the holders thereof to kill or shoot elephants will be issued only upon the following conditions :—

(1) The applicant therefor shall produce a certificate signed in the case of a military officer by his Commanding Officer and in the case of other persons by a member of the Executive Council or by a District Commissioner that he is in possession of a rifle which shall fire a charge of not less than 70 grains of cordite or other explosive of equivalent force, and bullet of not less than 480 grains in weight.

(2) Under no circumstances shall the holder of any such licence in the first instance fire at any elephant with any weapon which shall fire a lesser charge of explosive or a lighter bullet than those hereinbefore described.

(3) If the holder of such licence shall proceed on an expedition from Freetown for the purpose of shooting elephants, he shall make all necessary arrangements for the hire of carriers and the purchase of rice at Freetown, and if such person shall proceed upon such expedition from any place other than Freetown, then he shall make such arrangements for carriers or for the purchase of rice as the District Commissioner of the district in which such person is travelling shall approve ; and in no case shall such person be entitled to engage carriers or to purchase rice in the Protectorate when upon such expedition, unless the consent of such District Commissioner shall have been previously obtained.

(4) If any person shall commit a breach of the regulations hereinbefore set out he shall upon summary conviction be liable to a penalty not exceeding

£25, or in default of payment thereof, to imprisonment with or without hard labour for any period not exceeding six months.

Done and passed by the Governor-in-Council this Thirtieth day of August, 1909.

F. A. MILLER,
Clerk of Executive Council.

ENCLOSURE 2 IN No. 33.

ACTING ATTORNEY-GENERAL TO THE GOVERNOR.

REGULATIONS made under Section II. (8) of "The Wild Animals Birds and Fish Preservation Ordinance, 1901." (No. 30 of 1901.)

I have the honour to report on the above regulations which passed the Legislative Council on the 30th August last, and are not subject to disallowance by His Majesty.

These regulations authorise that all persons about to proceed on an expedition to shoot elephants and desiring to obtain a licence for the purpose must produce a certificate which should be signed by the Commanding Officer where the applicant is a military officer, and in the case of other persons by a member of the Executive Council or a District Commissioner as the case may be.

Such certificate must state that the applicant is in possession of a rifle of a specified calibre as prescribed in the order.

The licensee is required to make all necessary arrangements for the hire of carriers and the purchase of rice where the expedition is proceeding from Freetown; and in case such expedition shall proceed from a place other than Freetown, such arrangements should be made to the satisfaction of the District Commissioner.

Breach of these regulations will render the offender liable to a penalty not exceeding £25.

They are legal and in proper form.

K. J. BEATTY,
Acting Attorney-General.

CROWN LAW OFFICERS' CHAMBERS,
FREETOWN, SIERRA LEONE,
21st September, 1909.

ADDITIONS TO GAME LAWS OF NORTH-WESTERN RHODESIA.

An area has been declared a Game Reserve in the Kafue District bounded as follows:

"From the Lunga-Kafue Junction, down the Kafue River to the Lafupa-Kafue Junction, up the Lafupa-River to the Lafupa-Tembwe confluence; thence in a Westerly direction to the headwaters of the Lalafuta River; thence South along the Kafue-Zambesi watershed to the headwaters of the Musa River, down the Musa River to its junction with the Kafue River, down the Kafue River to the Kafue-Nasanga or Nasenga confluence; thence up the Nasanga or Nasenga River to its headwaters; thence in a North-Westerly direction to the Lunga-Kafue confluence."

5. A tract of land along the Northern bank of the Zambesi River extending from the Victoria Falls Eastward for a distance of forty miles and having a breadth of two miles from any point along the river bank has also been declared to be a game reserve, so far as animals are concerned.

The export of any carcase, skin, fat or parts thereof, whether fresh or prepared of any game mentioned in Schedules 2 and 3, is forbidden except under permit of the Administrator, and in addition to the penalties provided for a person contravening the law on this subject, the carcase, etc., exported without permit may be confiscated. The Administrator's permit is obtained through the Secretary to the Administration at Livingstone.

(Any European member of a recognised Missionary Society which carries on its work in the territory may, under the authority of an Ordinary Licence, hunt and kill game mentioned in Schedule 2, not exceeding ten head of such game.)

The words "live animals or Game" are equivalent to "any Game whether alive or dead."

Importation of Arms and Ammunition into North-Western Rhodesia.

Proclamations No. 18 *of* 1901, 34 *and* 64 *of* 1908.

No person may introduce into the territory of North-Western Rhodesia any firearms or ammunition until a permit authorising such importation has been obtained from the Civil Commissioner at Livingstone, or from an Official in charge of a District. A description of the arms and ammunition which the applicant desires to import should, in each case, accompany the application for the permit.

Charges for Permits.

Import of arms, which includes all arms the property of one individual .. 2*s.* 6*d.*

Import of ammunition (limited, however, in the case of a holder of a £1 licence only, to a maximum of 100 rounds rifle cartridges, in addition to shot and/or pistol cartridges) .. .. 6*d.*

Commission, etc., should be added to all cheques drawn on banks outside North-Western Rhodesia as follows:—

If drawn on English Banks, 1 per cent. plus 1*d.*, minimum 2*s.* 7*d.*

If drawn on any bank in Africa outside North-Western Rhodesia, ½ per cent. plus 1*d.*, minimum 1*s.* 1*d.*

It should be noted that in the case of visitors from England, bringing guns or ammunition as part of their personal luggage, the Customs Officials at the Cape ports will take possession of the arms or ammunition and forward them to Livingstone Customs House "in bond," unless a permit for their introduction into North-Western Rhodesia, countersigned by the Cape Colonial Secretary, be produced, when on payment of the duty arms may remain in the custody of the owner. It will therefore save much trouble if arms are sent forward to Livingstone from England some few weeks before the sportsman himself, consigned through an Agent and marked "in bond." The owner must then obtain his permit from the Civil Commissioner before releasing the goods from the Customs House.

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BRADBURY, AGNEW, & CO. LD., PRINTERS, LONDON AND TONBRIDGE.